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REVISION OF THE PALAEARCTIC SPECIES OF *HALIPLUS* SUBGENUS *LIAPHLUS* GUIGNOT (COLEOPTERA: HALIPLIDAE)

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The palaearctic species of the subgenus *Liaphlus* Guignot, genus *Haliplus* Latreille, are revised. Thirty species are recognised. The following new synonyms are established : *H. modestus* Zimmermann as a junior synonym of *H. eximis* Clark, *H. subguttatus* Crotch and *H. salinarius* Wallis of *H. fulvus* (Fabricius), *H. pelopis* Sahlberg of *H. guttatus* Aubé, *H. syriacus* Wehncke and *H. zimmermanni* Gschwendtner of *H. maculatus* Motschulsky and *H. transvolgensis* Semenov of *H. variegatus* Sturm. Eight new species are described: *H. angusi*, *H. astrakhanus*, *H. davidi*, *H. excoffieri*, *H. gafnyi*, *H. holmeni*, *H. jaechi* and *H. ortali*. A key to the species is provided. Most primary types have been examined. Lectotypes have been designated for *H. abbreviatus* Wehncke, *H. andalusicus* Wehncke, *H. basinotatus* Zimmermann, *H. dalmatinus* Müller, *H. dalmatinus* var. *weberi* Müller, *H. interpunctatus* (Marsham), *H. lapponum* Thomson, *H. fulvus sparreschneideri* Munster, *H. guttatus* Aubé, *H. maculatus* Motschulsky, *H. pelopis* Sahlberg, *H. cinereus* Aubé, *H. ovalis* Sharp, *H. sharpi* Wehncke, *H. syriacus* Wehncke, *H. zimmermanni* Gschwendtner, *H. variegatus* ab. *pallidior* Müller, *H. leopardinus* Sahlberg and *H. transvolgensis* Semenov.

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Key words. – *Liaphlus*, palaearctic region, China, new species.

CONTENTS

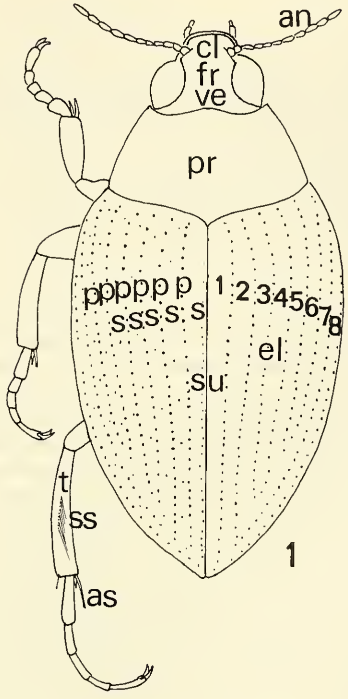
Introduction 75
Methods 76
Systematic section 77
Checklist of treated species 78
Key to the palaearctic species of *Liaphlus* 78
Description of the palaearctic species of *Liaphlus* 81
Unnamed material 135
Acknowledgements 135
References 136
Maps 140

INTRODUCTION

This revision deals with the palaearctic species of *Liaphlus*, a subgenus of *Haliplus*, one of the five genera of the waterbeetle-family Haliplidae. The latest revision of *Haliplus* in the palaearctic region was by Zimmermann (1924). The status of some species remained uncertain. Afterwards some new species have been described from the southern and eastern parts of the region. Various problems in recognizing and identifying species make a revision necessary.

In 1928 Guignot erected the subgenus *Liaphlus* for the *Haliplus*-species lacking the pronotal basal plicae and possessing a setiferous striole on the dorsal side of the metatibia. Afterwards Guignot (1955) proposed a division of *Liaphlus* into 9 species-groups, of which 4 groups are represented in the palaearctic region as treated in this revision. Especially outside the palaearctic region his division is certainly in some cases based upon misinterpretations. For instance the oriental species *Haliplus angustifrons* Régimbart and *H. arrowi* Guignot are placed in different groups. In my opinion however, these species are very closely related. A similar case is *Haliplus pulchellus* Clark and *H. diopus* Guignot, also placed in different groups, but also closely related.

The subgeneric status of *Haliplus laminatus* (Schaller) is not completely clear. According to the



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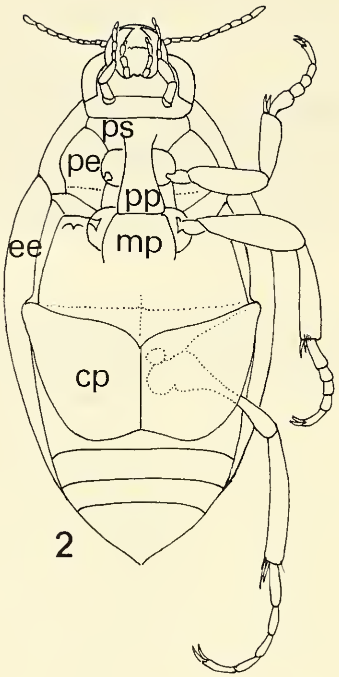

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Fig. 1. *Haliplus flavicollis*, dorsal view. – an, antenna; as, apical spur; cl, clypeus; el, elytron; fr, frons; 1, 2, 3, etc, first, second, third, etc. elytral interval; p, primary puncture-row; pr, pronotum; s, secondary puncture-row; su, suture; ss, setiferous striole; t, tibia; ve, vertex.

Fig. 2. *Haliplus flavicollis*, ventral view. – cp, hind coxal plate; ee, elytral epipleuron; mp, metasternal process; pe, proepisternum; pp, prosternal process; ps, prosternum.

definitions for *Liaphlus* it should belong to that subgenus, but the larval stages are distinctly different and very much like the larvae found in the subgenus *Haliplus* s. str. (sensu Guignot 1928) (Vondel 1986).

Beutel & Ruhnau (1990) made a phylogenetic analysis of the genera of Haliplidae based on characters of adults. However, on subgeneric level and below much more study is needed to elucidate the phylogenetic relationships within the Haliplidae. For that reason I refrain from dividing the species in this revision into species-groups. They are simply treated in alphabetical order.

For many species the type-material was studied. For some species, of which the status seemed clear to me, only few or no attempts have been made to trace and study the type-material. In some other cases several attempts to locate the types failed. About 2800 specimens have been studied, mostly from Western Europe. Eastern and Southern palaearctic material is relatively scarce in the collections I had access to.

For all species (re)descriptions are provided.

Female genitalia are not described, because they usually are very uniform and further research is necessary to check if there are characters reliable enough to separate related species.

Descriptions of larvae are not included.

Methods

Before dissecting the aedeagus the beetles are softened in water with detergent for about 2 hours. The aedeagus is pulled out with a small hooked needle and placed into a drop of alcohol. During dissection the beetle has to be kept wet, to prevent the severed aedeagus jumping out of sight. In alcohol the left- and right parameres are separated from the penis by using fine needles. When the alcohol has almost dried up the three parts are usually glued with Fauré-mixture on the same piece of cardboard as the beetle. The penis and the parameres are positioned so that they are seen from the side. The water-soluble Fauré-mixture makes it possible to loosen the genitalia to study them in another position or to make temporary slide mounts. In some cases the genitalia are transferred into Euparal on a plastic card, covered by a coverslip and pinned to the original needle. Genitalia should not be glued to plastic cards with water-soluble glue as they are liable to become detached in time.

Drawings of genitalia are made by using a Swift universal microscope with a camera lucida attachment. The other drawings are made by using a Zeiss binocular with an ocular-micrometer.

Measurements are made by using the ocular-micrometer of a Zeiss binocular.

Morphological terms are according to figs. 1 and 2.

The palaearctic region as treated in this revision comprises Europe including Iceland, North Africa north of the Sahara and Asia north of the line formed by the northern borders of Pakistan, India, Nepal, Bhutan, Burma, Laos and Vietnam. For practical reasons Taiwan and China as a whole are taken into account, although the south-eastern part has an oriental fauna.

Material of many institutions and private persons has been studied, including a number of primary types. Locality-names are given, as far as possible, according to the Times Atlas of the World (Comprehensive edition, 1983). Deviating names on original labels are cited, when necessary, in parentheses. In a number of cases I was not able to trace the locality, because of the poor or unreadable labels. Countries are used with their present-day boundaries.

Distribution-maps are based on material examined. Reliable literature-records are included, but using different symbols.

Data on biology are seldom present on labels, so notes on the biology are mainly based on literature and the author's experience. If nothing is mentioned in the descriptions about biology, such information was unknown to the author.

The institutions from which material has been examined or which are otherwise referred to in the text have been abbreviated according to Arnett & Samuelson (1986) with the addition of:

HUJI – IES Laboratory, Hebrew University of Jerusalem, Israel.

MSNT – Museo Civico di Storia Naturale, Trieste, Italy.

MOG – Museum voor het Onderwijs Museon, 's Gravenhage, Netherlands.

RIN – Rijks Instituut voor Natuurbeheer, Leersum, Netherlands.

Further material from the following private collections has been studied: Angus, Englefield Green, UK; van Berge Henegouwen, Zoetermeer, Netherlands; Cuppen, Ede, Netherlands; Drost, Wadenoijen, Netherlands; Giessen, Gaanderen, Netherlands; Hielkema, Gouda, Netherlands; Huijbregts, Leidschendam, Netherlands; Jongema, Wageningen, Netherlands; Kanaar, Leiderdorp, Netherlands; Leblanc, Troyes, France; Matsui, Hondo City, Japan; Onder de Linden, Krimpen aan de IJssel, Netherlands; Rotzer, Gampel, Switzerland; Schilthuizen, Leiden, Netherlands; Schreijer, Alkmaar, Netherlands; Sung Hwa Lee, Taegu, Korea; Vallenduuk, Lelystad, Netherlands; Vondel, Hendrik Ido Ambacht, Netherlands.

SYSTEMATIC SECTION

Subgenus *Liaphlus* Guignot

Haliplus sg. *Liaphlus* Guignot, 1928: 138. Type species: *Dytiscus fulvus* Fabricius, 1801, by subsequent designation (Guignot 1930: 75).

Haliplus sg. *Hoplites* Kinel, 1929: 219. Preoccupied. [See remarks under *Haliplus laminatus*.] Type species: *Dytiscus laminatus* Schaller, 1783, by monotypy.

Liaphlus Guignot; Guignot 1933: 228, 1947: 48, 1959: 33, Balfour-Browne 1936: 76, 1938: 12, Csiki 1946: 558, Zaitsev 1953: 43, Freude 1971: 15, Galewski 1976: 27, Franciscolo 1979: 108, Vondel 1986: 132, Holmen 1987: 110, Beutel & Ruhnau 1990: 11.

Diagnosis. – The following character set is diagnostic for specimens of this subgenus:

1. Pronotum without basal plicae.
2. Metatibia with a setiferous striole on dorsal face.
3. Males: right paramere with a solid digitus. This is not the case in *H. laminatus* (see remarks under that species).

Remarks. – *Liaphlus* is represented in all faunal regions. Beutel & Ruhnau (1990) examined a large number of characters of nine species of *Liaphlus* from different faunal regions, but they did not find evidence for the monophyly of the subgenus.

Within the Haliplidae *Liaphlus* can be recognised by means of the following keys.

Key to the genera of world Haliplidae

1. Last segment of palpi longer than penultimate segment. Metacoxal plates at least covering part of sixth abdominal sternite... *Peltodytes* Régimbart
– Last segment of palpi clearly shorter than penultimate segment. Last three abdominal sternites freely visible..................................2

2. Head as wide as pronotum. Elytra strongly punctured, not in rows .... *Algophilus* Zimmermann
- Head not as wide as pronotum. Elytra with clear rows of punctures 3
3. Pronotum almost square, front-corners strongly rounded, elytra usually with longitudinal ridges .... *Brychius* Thomson
- Pronotum widest at base, sides converging anteriorly, elytra without longitudinal ridges in first six intervals 4
4. Median part of prosternum and base of prosternal process forming a plateau-like elevation, at least in part angularly separated from sides of prosternum .... *Haliplus* Latreille
- Prosternum evenly rounded from side to side .... *Apteraliplus* Chandler

Note: *Algophilus* is restricted to South Africa, while *Apteraliplus* is only known from North America.

Key to the palaearctic subgenera of *Haliplus*:

1. Dorsal and ventral side of body with clearly visible (30 x) micropuncturation, on elytra between small primary punctures .... *Haliplidius* Guignot
- Elytra smooth or with much weaker micropuncturation (visible at 50 x) between strong primary puncture-rows 2
2. Hind tibia with a setiferous striole on dorsal face. Pronotum without basal longitudinal plicae .... *Liaphlus* Guignot
- Hind tibia without a setiferous striole on dorsal face. Base of pronotum on both sides with a, sometimes very short, rarely absent, longitudinal plica 3
3. Pronotal plicae reaching beyond middle and strongly bent .... *Neohaliplus* Netolitzky
- Pronotal plicae not reaching beyond middle, straight or slightly curved ..... *Haliplus* s.str.

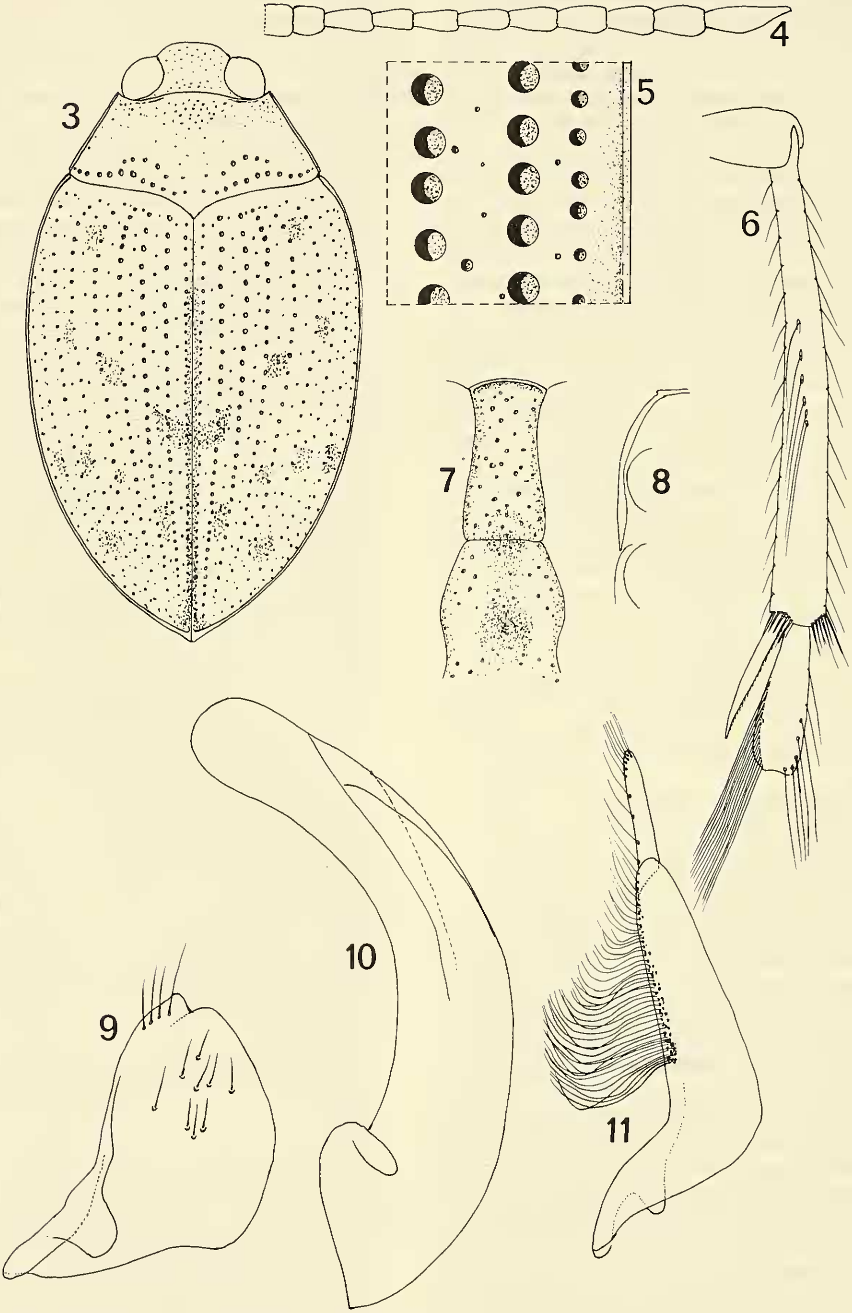
Checklist of palaearctic *Haliplus* (*Liaphlus*)

1. *H. abbreviatus* Wehncke, 1880
2. *H. andalusicus* Wehncke, 1874
3. *H. angusi* **sp. n.**
4. *H. astrakhanus* **sp. n.**
5. *H. basinotatus* Zimmermann, 1924
6. *H. chinensis* Falkenström, 1932
7. *H. dalmatinus* J. Müller, 1900
8. *H. davidi* **sp. n.**
9. *H. diruptus* Balfour-Browne, 1946
10. *H. excoffieri* **sp. n.**
11. *H. eximis* Clark, 1863
    H. modestus Zimmermann, 1924 **syn. n.**
12. *H. flavicollis* Sturm, 1834
13. *H. fulvus* (Fabricius), 1801
    H. subguttatus Crotch, 1873 **syn. n.**
    H. salinarius Wallis, 1933 **syn. n.**
14. *H. gafnyi* **sp. n.**
15. *H. guttatus* Aubé, 1836
    H. pelopis Sahlberg, 1907 **syn. n.**
16. *H. holmeni* **sp. n.**
17. *H. jaechi* **sp. n.**
18. *H. kotoshonis* Kano & Kamiya, 1931
19. *H. kulleri* Vondel, 1988
20. *H. laminatus* (Schaller, 1783)
21. *H. maculatus* Motschulsky, 1860
    H. syriacus Wehncke, 1880 **syn. n.**
    H. zimmermanni Gschwendtner, 1921 **syn. n.**
22. *H. maculipennis* Schaum, 1864
23. *H. mucronatus* Stephens, 1828
24. *H. ortali* **sp. n.**
25. *H. ovalis* Sharp, 1884
26. *H. pulchellus* Clark, 1863
27. *H. rubidus* Perris, 1857
28. *H. sharpi* Wehncke, 1880
29. *H. variegatus* Sturm, 1834
    H. transvolgensis Semenov, 1904 **syn. n.**
30. *H. villiersi* Legros, 1972

Key to the palaearctic species of *Liaphlus*

1. Distance between eyes about eye-width (fig. 170, 208, 244) 2
- Distance between eyes at least 1.2 × eye-width 4
2. Prosternal process furrowed on both sides (fig. 248) 26.*pulchellus*
- Prosternal process strongly impressed in middle, at least in apical half (fig. 174) 3
3. Elytra with basal black band, eighth puncture-row with about nine small dark blotches 22.*maculipennis*
- Elytra without basal black band, eighth puncture-row not with dense row of dark blotches 18.*kotoshonis*
4. Head relatively wide (fig. 217), distance between eyes at least 2.3 × eye-width. Metasternal process flat in middle. Elytra without dark blotches 23.*mucronatus*
- Head narrower. Metasternal process at least with small pit or groove in middle 5
5. Sides of prosternal process before coxae extending forwards as complete plicae to anterior edge of prosternum (fig. 8) 8
- Sides of prosternal process before coxae not completely extending forwards as plicae to an-

terior edge of prosternum (fig. 116)..........6
6. Plicae on sides of prosternal process widely interrupted before coxae (fig. 17). Longer apical spur of hind tibia usually as long as or longer than first tarsal segment (fig. 15). Elytra mostly with darker blotches..... 2.*andalusicus*
- Plicae on sides of prosternal process completely absent before coxae (fig. 116). Elytra without clear blotches. Apical spurs of hind tibia not as long as first tarsal segment.......7
7. Punctures of primary elytral rows wide in basal area, distance between rows not more than diameter of punctures (fig. 255). Distance between eyes 1.7-1.9 × eye-width..... 27.*rubidus*
- Punctures of primary elytral rows rather small, distance between rows more than diameter of punctures (fig. 113). Distance between eyes 1.4-1.6 × eye-width.................12.*flavicollis*
8. Setiferous striole on dorsal face of hind tibia stretched over apical half (fig. 195). Elytra usually with more or less confluent and interrupted dark lines following rows of dark punctures, but distinct blotches usually absent. Basal elytral punctures coalescing to form short grooves (fig. 188). Male: first tarsal segment of midlegs strongly dilated ventrally (fig. 192). Female: elytra almost completely covered with micro-punctures.................... 20.*laminatus*
- Setiferous striole on dorsal face of hind tibia usually not longer than ⅓ × tibia length, not reaching apical point. Male: first 3 tarsal segments of midlegs weakly dilated ventrally. Female: elytra without clear micropunctuation..9
9. Elytra without dark blotches. Pronotal and elytral punctures black....................11.*eximis*
- Elytra with dark blotches, or when these blotches are strongly reduced or absent punctures on disc of pronotum are not black 10
10. Elytra with basal transverse black band as dark as sutural maculation..........................34
- Elytra without basal black band. Sometimes some transverse darkening separated from basal margin or a brown basal band, clearly less dark than sutural maculation.................11
11. Widened basal punctures on pronotum twice the width of elytral primary punctures (fig. 141). Body-shape parallel or subparallel. Prosternal process narrow, length 2.6 × width, slightly narrowed near coxae (fig. 145). Elytra with mostly vague blotches, one large blotch on middle of suture and three smaller ones on each elytron..........................15.*guttatus*
- Basal punctures on pronotum usually not twice as wide as elytral primary punctures. Body not clearly parallel..................................12
12. Length 3.6-4.5 mm..............................29
- Length 2.6-3.6 mm..............................13
13. Elytra with longitudinal distinct blotches in even intervals, blotches not connected to darkened suture....................................14
- Elytral blotches different...................... 17
14. Metasternal process flat anteriorly. Vertex darkened...15
- Metasternal process grooved anteriorly. Vertex not darkened 16
15. Setiferous striole weak, about ⅙ × tibia length (fig. 33). First elytral primary puncture-row with about 28 punctures. Pronotum anteriorly partly bordered. Males: left paramere with solid digitus (fig. 36).............4.*astrakhanus*
- Setiferous striole strong, about ⅓ × tibia length (fig. 202). First elytral primary puncture-row usually with more than 28 punctures. Pronotum anteriorly not bordered. Males: left paramere without solid digitus.................. .... specimens of 21.*maculatus*
16. Distance between eyes less than 1.7 × eye-width. Males: top of penis short (fig. 64)...................specimens of 7.*dalmatinus*
- Distance between eyes more than 1.7 × eye-width. Males: top of penis long, usually slightly widened apically (fig. 278)...................... .... specimens of 29.*variegatus*
17. Elytra with large maculation, discal blotch and blotch in apical part connected to darkened suture..18
- Elytra with usually vague maculation on first and even intervals, or only darkening on discal parts of puncture-rows, blotches on apical part not connected to suture......................21
18. Length of prosternal process 2.6 × width (fig. 25).......................................3.*angusi*
- Length of prosternal process less than 2.4 × width... 19
19. Prosternal process hardly narrowed near coxae (fig. 73). Males: left paramere with short digitus..8.*davidi*
- Prosternal process clearly narrowed near coxae. Males: left paramere without digitus20
20. Distance between eyes more than 1.7 × eye-width...............specimens of 29.*variegatus*
- Distance between eyes less than 1.7 × eye-width.................. specimens of 9.*diruptus*
21. Metasternal process grooved anteriorly, weakly punctured.............................. 22
- Metasternal process flat anteriorly...........23
22. Prosternal process impressed posteriorly (fig. 287). Elytral primary puncture-rows sparse, sutural punctures weak (fig. 285) 30.*villiersi*
- Prosternal process posteriorly at most with weak transverse impression (fig. 7). Elytral primary puncture-rows dense, sutural punctures strong (fig. 5)...............1.*abbreviatus*



Figs. 3-11. *Haliplus abbreviatus*, locality unknown. – 3, dorsal view; 4, antenna; 5, elytral punctuation; 6, dorsal side of hind tibia; 7, prosternal process; 8, lateral view of prosternal process; 9, left paramere; 10, penis; 11, right paramere.

23. Males 24

– Females 27

24. Left paramere without solid digitus 14.*gafnyi*

– Left paramere with solid digitus 25

25. Digitus on left paramere long and parallel-sided. Base of pronotum with about five stronger punctures on both sides.... 19.*kulleri*

– Digitus on left paramere tapering. Base of pronotum with almost continuous row of stronger punctures 26

26. Left paramere with strongly developed tapering digitus, row of long hairs on inner margin of paramere 17.*jaechi*

– Left paramere with small tapering digitus, at most some short hairs on inner margin of paramere 24.*ortali*

27. Metasternal process flat with shallow pit in middle, strongly and densely punctured, small punctures between large ones (fig. 136)........ .... 14.*gafnyi*

– Metasternal process with clear pit in middle, sparsely and moderately strongly punctured (fig. 183) 28

28. Basal punctures on pronotum weak and reduced in the middle (fig. 179). Prosternal process weakly narrowed (fig. 183)..... 19.*kulleri*

– Base of pronotum with continuous row of strong punctures (fig. 161). Prosternal process strongly narrowed (fig. 165) .... 17.*jaechi* or 24.*ortali*

29. Distance between eyes less than 1.4 × eye-width 30

– Distance between eyes more than 1.4 × eye-width 31

30. Black suture not reaching first secondary puncture-row in basal part (fig. 91). Body strongly tapering apically. Penis and parameres figs. 99-101 .... 10.*excoffieri*

– Black suture reaching first secondary puncture-row in basal part (fig. 48). Body more oval. Penis and parameres figs. 54-56.......... .... 6. *chinensis*

31. Elytral discal blotch connected to suture. Penis and parameres figs. 241-243........... 25.*ovalis*

– Elytral discal blotch not connected to suture 32

32. Length of hind tarsus including claws more than 1.3 × tibia length. Prosternal process slightly narrowed near coxae, narrowed part 0.6 to 0.7 × widest part. Punctures of setiferous striole not connected in a groove. Male: digitus of right paramere ⅕ × length of basal part.... .... large specimens of 7.*dalmatinus*

– Length of hind tarsus less than 1.3 × tibia length. Prosternal process strongly narrowed near coxae, narrowed part 0.5 × width of widest part 33

33. Distance between eyes less than 1.6 × eye-width. Setiferous striole on dorsal side of hind tibia not strongly grooved, separate points usually clearly visible. Male: apical part of penis very narrow and pointed (fig. 205)............ .... 21.*maculatus*

– Distance between eyes more than 1.6 × eye-width. Setiferous striole on dorsal side of hind tibia strongly grooved, separate points not or hardly visible. Male: apical part of penis wide and rounded at the top (fig. 127)..... 13.*fulvus*

34. Length 3.5-4.1 mm. Black sutural stripe in anterior half at most reaching first secondary puncture-row 5.*basinotatus*

– Length at most 3.6 mm. Black sutural stripe reaching first primary puncture-row 35

35. Distance between eyes about 1.2 × eye-width. Prosternal process wide, impressed apically, weakly narrowed near coxae (fig. 155). Setiferous striole on dorsal side of hind tibia consisting of about 6 isolated points, not grooved (fig. 154). Male: left paramere with solid digitus (fig. 158). Between fore-claws a small cushion (fig. 153) 16.*holmeni*

– Distance between eyes 1.3-1.5 × eye-width 36

36. Fourth and fifth antennal segment about as long as wide (fig. 263). Punctures in first to fourth primary elytral rows weaker than in other puncture-rows. Prosternal process broad, hardly narrowed near coxae, hardly or not impressed apically (fig. 266). Anterior edge of prosternum clearly and completely bordered .... 28.*sharpi.*

– Fifth antennal segment clearly longer than wide. Inner primary puncture-rows of elytra not weaker than outer ones. Prosternal process strongly narrowed near coxae, strongly impressed apically. Anterior edge of prosternum only bordered near process. South-east palaearctic or north oriental specimens of 9.*diruptus*

DESCRIPTION OF THE PALAEARCTIC SPECIES OF LIAPHLUS

1. *Haliplus abbreviatus* Wehncke

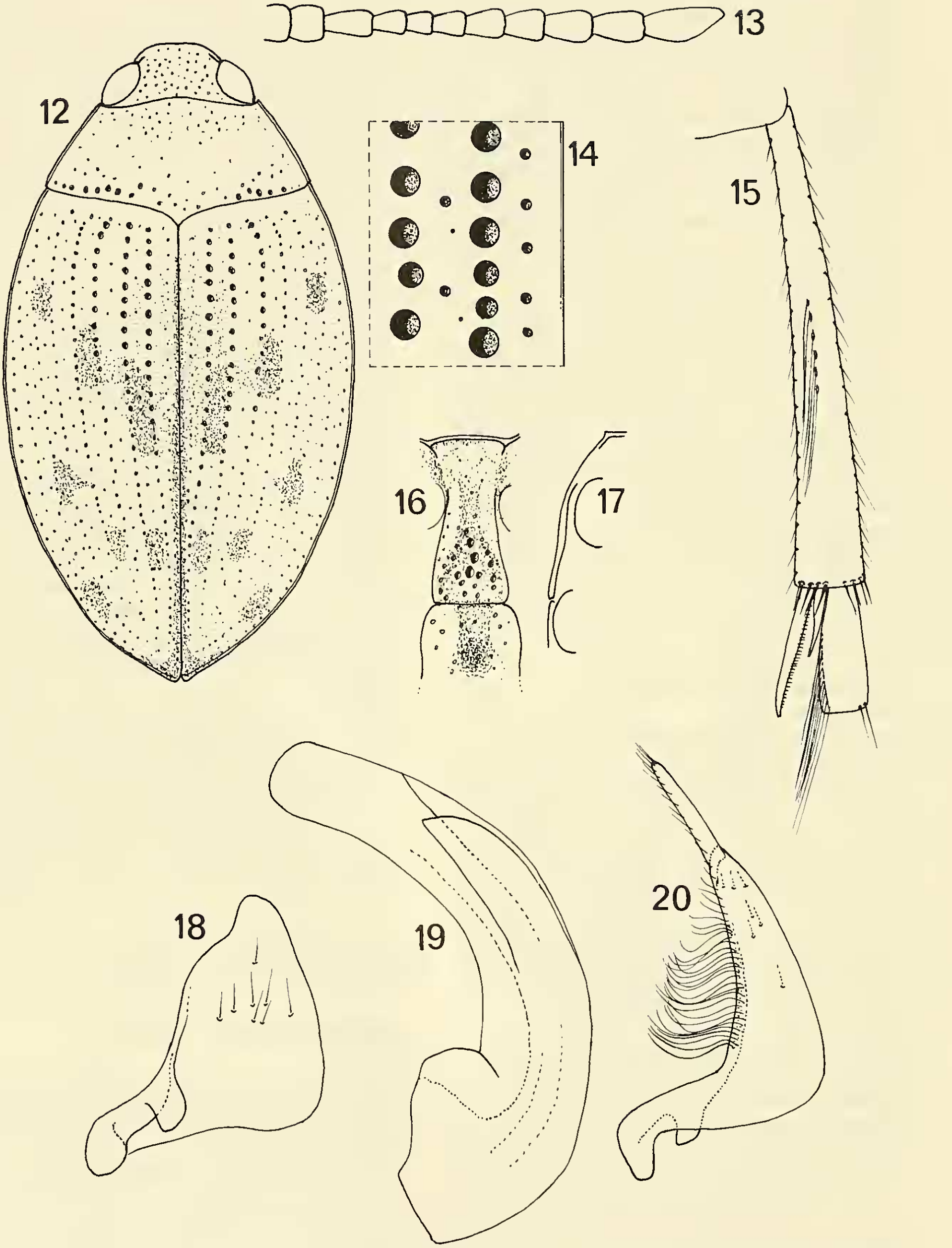
(figs. 3-11)

Haliplus abbreviatus Wehncke, 1880: 73. Lectotype ♀ (here designated), [Iraq] 'Mesopotamia, Sharp' (MNHN) [examined].

Haliplus abbreviatus; Zimmermann 1920: 303, 1924: 136, Alfieri 1976: 38.

Diagnosis

This species is closely related to *villiersi* or even conspecific. Specimens of *villiersi* have the prosternal process more impressed posteriorly, the prim-



Figs. 12-20. *Haliplus andalusicus*, lectotype. – 12, dorsal view; 13, antenna; 14, elytral punctuation; 15, dorsal side of hind tibia; 16, prosternal process; 17, lateral view of prosternal process; 18, left paramere; 19, penis; 20, right paramere.

ary elytral puncture-rows sparser and the sutural punctures weaker.

Description

Length 3.0 mm, width 1.7 mm. Body oval, widest in the middle (fig. 3).

Head. – Light brown, rather strongly punctured, more sparsely punctured between the eyes (fig. 3). Distance between the eyes 1.6 × eye-width. Antennae (fig. 4) and palpi yellow-brown.

Pronotum. – Yellow-brown, base and front margin slightly darkened. Lateral borders straight to slightly convex, with fine dark margins. Disc sparsely punctured, front margin behind an unpunctured zone with a strongly punctured band, base strongly punctured, basal puncture-row partly widened and darkened (fig. 3).

Elytra. – Yellow-brown with in the anterior half fairly strong and apically weaker primary puncture-rows, punctures brown to almost black (fig. 5). First primary puncture-row with about 30 punctures. Secondary puncture-rows fine. Brown, sometimes vague markings on the even intervals, on the apical point and along the apical ⅔ of the suture, median spot connected to the suture.

Ventral side. – Body yellow-brown to yellow-red, prosternal process partly dark-brown, elytral epipleura yellow, legs yellow-brown with some darkening around the coxae and trochanteres. Prosternal process flat, slightly impressed apically, narrowed near the front coxae, strongly punctured (fig.7), laterally completely bordered (fig.8). Metasternal process furrowed, deep pit in the middle, strongly punctured (fig.7). Setiferous striole on dorsal face of hind tibia with about 6 punctures, longer of the two tibial spurs almost as long as the first tarsal segment (fig.6).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 9-11.

Distribution (fig. 305)

Iraq, Iran?. Alfieri (1976) gives Egypt.

Remarks

This species is described here on the basis of a single female (lectotype) and two male specimens, which are considered to belong to this species (figs. 3-11). It is probably a very variable species, which often may be confused with *variegatus*. There is a good chance that a number of the middle eastern specimens, in literature cited as *variegatus* belong to *abbreviatus*.

Material examined. – 3 ex. – Iraq: 1 ♀ (lectotype). – Iran(?): 1 ♂, Turcom, Kurd., 15943, Millingen, Fry Coll. (BMNH) – Without locality: 1 ♂, Reitter (NHMW).

2. ***Haliplus andalusicus*** Wehncke
(figs. 12-20)

Haliplus andalusicus Wehncke, 1874: 135. Lectotype ♂ (here designated), [Spain] 'Andalusia, Dieck, Dr. Guignot visité 1925' (MNHN) [examined].

Haliplus andalusicus; Marseul 1882: 107, Seidlitz 1887: 30, Escalera 1914: 57, Scholz 1916: 17, Zimmermann 1920: 303, 1924: 136, Guignot 1933: 232, 1947: 52, 1959: 35, Burmeister 1939: 214, Lagar Mascaro 1968: 73, Hoch 1972: 251, Ienistea 1978: 294.

Diagnosis

This species is most easily confused with *variegatus* from which it can be distinguished by the interrupted lateral plicae of the prosternal process and the apical spur of the hind tibia being as long as or longer than the first tarsal segment.

Description

Length 2.5-3.0 mm, width 1.4-1.7 mm. Body oval, widest in the middle (fig. 12).

Head. – Yellow-brown with usually brown vertex, sparsely punctured. Distance between the eyes 1.9-2.0 × eye-width. Antennae (fig. 13) and palpi yellow to yellow-brown.

Pronotum. – Yellow to yellow-red. Lateral borders straight to slightly convex, finely bordered. Sparsely to rather strongly punctured, basal punctures slightly widened and darkened (fig. 12).

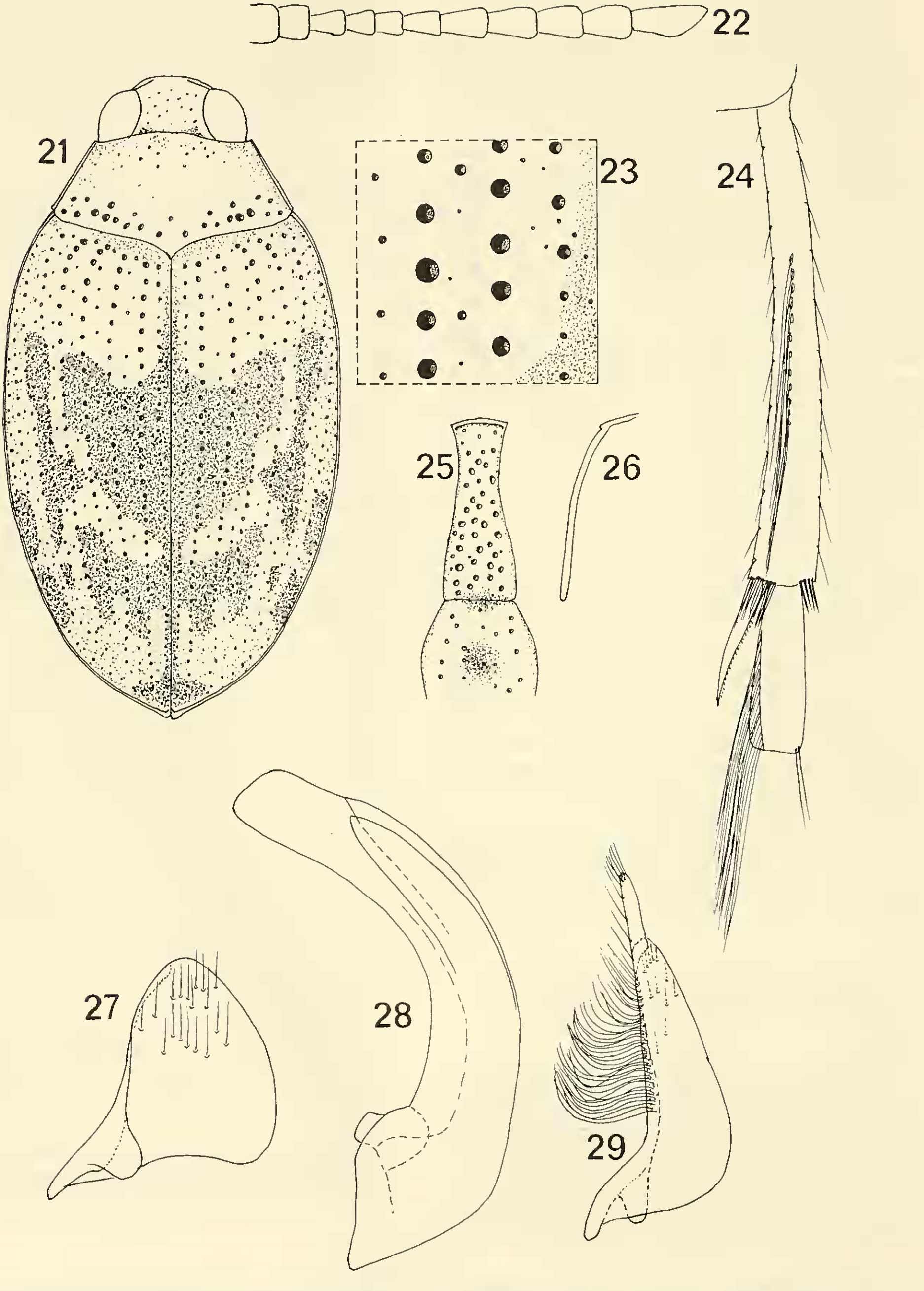
Elytra. – Yellow to yellow-red, primary puncture-rows rather weak with exception of the stronger punctures in the anterior half of the first three rows, 32-36 punctures in the first row (fig. 14). Secondary punctures weak. Darkening of the punctures not always visible. Brown to almost invisible markings on the even intervals, on the apical point and along the apical ⅔ of the suture, the median spot may be connected to the suture.

Ventral side. – Body yellow to yellow-brown, elytral epipleura yellow, legs yellow-brown. Prosternal process impressed in the middle, strongly punctured, narrowed near the coxae (fig. 16), lateral plicae interrupted before the coxae (fig. 17). Metasternal process grooved with a pit in the middle to largely impressed, sparsely punctured (fig. 16). Setiferous striole on dorsal face of hind tibia with 4-8 punctures, longer of the two tibial spurs as long as or longer than the first tarsal segment (fig. 15).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 18-20.

Biology

In fresh and especially brackish stagnant water in pools near the coast and more rarely inland.



Figs. 21-29. *Haliplus angusi*, holotype. – 21, dorsal view; 22, antenna; 23, elytral punctuation; 24, dorsal side of hind tibia; 25, prosternal process; 26, lateral view of prosternal process; 27, left paramere; 28, penis; 29, right paramere.

Distribution (fig. 298)
South of France, Spain (Burmeister 1939, gives The Baleares), Morocco, Algeria, Tunisia.

Material examined. – 38 ex. – France: 1 ♀, La Capelle [dep. Lozère], 30.vi/iv.1987 (Leblanc); 6 ex., Albaron, Camargue, A. Chobaut; 1 ex., Montpellier, Et. Laragne, V.M. Duchon (MNHN). – Spain: 1 ♂ (lectotype); 1 ♂ (paralectotype), Malaga, Sammlung Cl. Müller (ZSMC); 1 ex., Gibraltar; 1 ex., Palencia (BMNH). – Morocco: 4 ♂, Tanger, Rolph (BMNH). – Algeria: 2 ex., Massif des Mouzaia (BMNH); 4 ex., Philippeville, A. Thery (NHMW, MNHN); 1 ex., Biskra, surroundings, de Vauloger; 1 ex., Biskra, Mertu[?]; 2 ex., no further data (NHMW).–Tunisia: 2 ♂, Gafsa (NHMW); 2 ♂, 1 ♀, 3 ex., surroundings Gafsa, de Vauloger (NHMW, MNHN); 2 ex., Southern Tunisia, iii.iv.1925, ex coll. J. Omer Cooper (BMNH).–Locality unknown: 2 ♂ (paralectotypes), ex. coll. Wehncke (MNHN).

3. ***Haliplus angusi*** sp. n.
(figs. 21-29)

Type material. – Holotype ♂, USSR, Siberia, 28.v-28.vi.1982, Novosibirsk oblast, Karasuk, 53.5 N, 78 E, R. B. Angus (ZMAS).

Diagnosis
This species can be distinguished from related ones by the very narrow prosternal process. Possibly there is material in collections representing this species, but identified as *H. maculatus* Motschulsky.

Description
Length 3.3 mm, width 1.7 mm. Body oblong, subparallel, widest in the middle (fig. 21).

Head. – Yellow-red, dark mark on vertex, weakly and sparsely punctured. Distance between the eyes 1.6 × eye-width. Antennae yellow (fig. 22), palpi yellow.

Pronotum. – Yellow to yellow-brown on the disc. Lateral borders straight, lateral margin clearly finer anteriorly. Strongly darkened, occasionally widened punctures along the base, anteriorly rather weakly punctured, otherwise almost unpunctured. Along the central part of the base slightly impressed (fig. 21).

Elytra. – Pale yellow, primary puncture-rows moderately strong, about 33 punctures in the first row (fig. 23). Secondary punctures in the first interval almost as strong as the primary punctures, other secondary punctures rather weak, accompanied by small punctures (fig. 23). Extensive markings: a large arrow-shaped blotch on the disc, on the suture and the apex, often connected oblong blotches in the even intervals. The basal margin, normally covered by the pronotum, yellow-brown till the fifth striae (fig. 21).

Ventral side. – Yellow to yellow-red, elytral epipleura pale-yellow, abdominal segment brown bordered, legs yellow with some darkening near the coxae. Prosternal process narrow, flat, narrowed near the coxae, coarsely punctured (fig.25), lateral plicae complete (fig. 26). Metasternal process flat with a pit in the middle, sparsely punctured (fig. 25). Coxal plates sparsely and weakly punctured, near the suture almost unpunctured. Setiferous striole on dorsal side of hind tibia over ⅓ of the tibia length, with about 10 punctures, longer of the two tibial spurs ¾ × the length of the first tarsal segment (fig. 24).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 27-29.

Etymology. – This species is named after the collector Dr. Robert Angus.

Distribution (fig. 304)
Only known from the type-locality: USSR, Siberia, Novosibirsk oblast, Karasuk.

4. ***Haliplus astrakhanus*** sp. n.
(figs. 30-38)

Type material: Holotype ♂, [USSR, Astrakhan] 'Astracan, Koltze' (MNHN, Wehncke collection).

Diagnosis
This species is closely related to *ortali*, but in the males the top of the penis is narrower and more pointed.

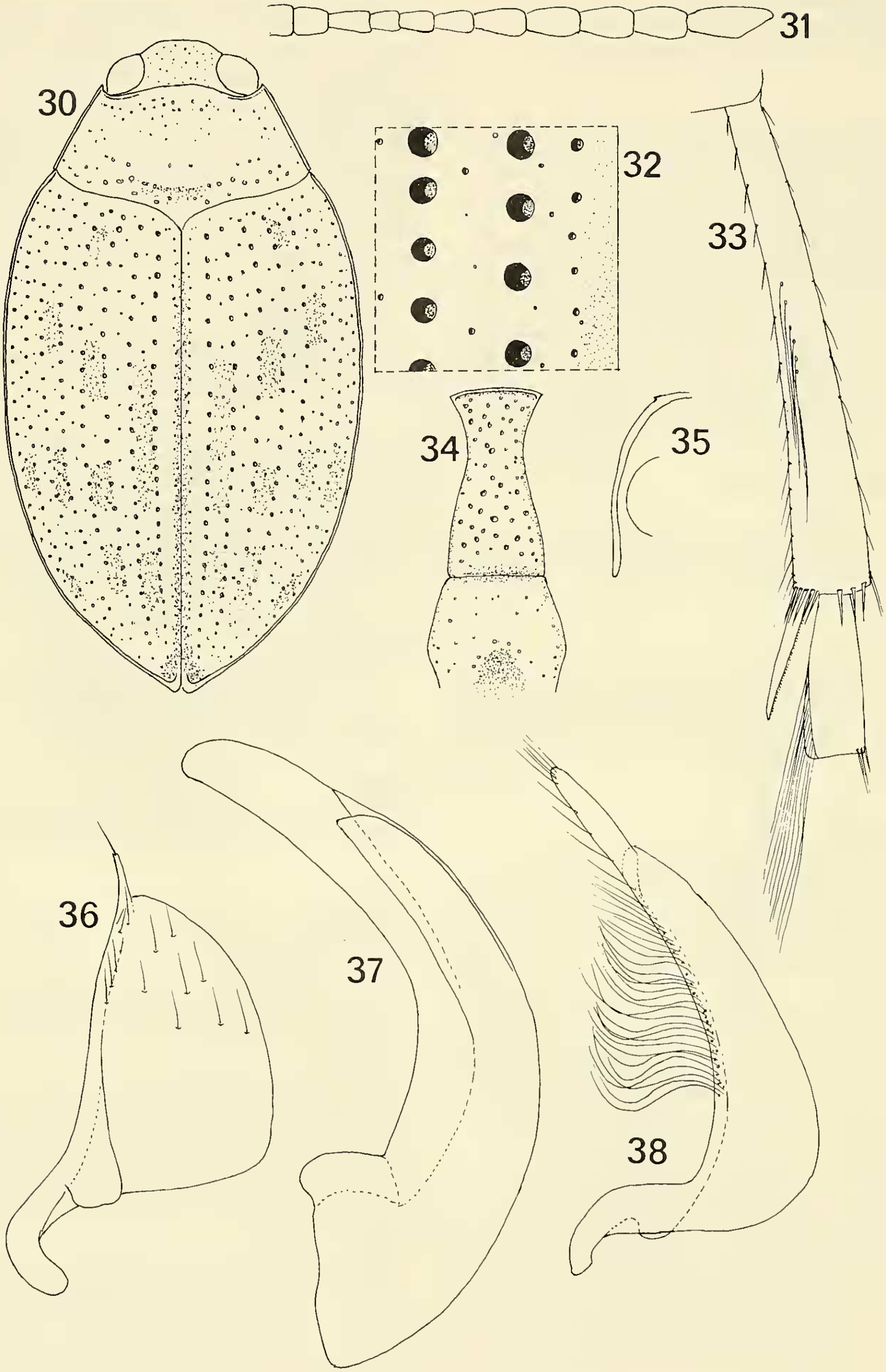
Description
Length 3.4 mm, width 1.9 mm. Body oval, widest in the middle (fig. 30).

Head. – Red-brown, weakly punctured, vertex little stronger punctured. Distance between the eyes 1.5 × eye-width. Antennae (fig. 31) and palpi yellow-red.

Pronotum. – Yellow-red, slightly darker on the disc and along the base. Lateral borders straight, finely bordered. Anteriorly partly bordered. Width 1.8 × the length in the middle. The middle of the base slightly impressed. Weakly punctured, along the base a row of stronger not or hardly darkened punctures (fig. 30).

Elytra. – Yellow-red, many longitudinal vague blotches on the even intervals and along the suture (fig.30). Primary puncture-rows moderately strong, about 28 punctures in the first row. Secondary punctures weak, accompanied by very small ones (fig. 32). All punctures darkened.

Ventral side. – Yellow-red to red-brown, elytral epipleura yellow, legs yellow-red, darkened to-



Figs. 30-38. *Haliplus astrakhanus*, holotype. – 30, dorsal view; 31, antenna; 32, elytral punctuation; 33, dorsal side of hind tibia; 34, prosternal process; 35, lateral view of prosternal process; 36, left paramere; 37, penis; 38, right paramere.

wards the coxae. Prosternal process flat, moderately strongly punctured, slightly narrowed near the coxae (fig. 34), lateral plicae complete (fig. 35). Metasternal process with a pit in the middle, weakly punctured (fig. 34). Setiferous striole $\frac{1}{6}$ × the tibia length, with about 6 weak punctures, longer of the two tibial spurs ⅔ × the length of the first tarsal segment (fig. 33).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and paramere as in figs. 36-38, left paramere with a small solid parallel digitus, top of penis narrow and a little pointed.

Etymology. – Named after the type locality.

Distribution (fig. 304)

Only known from the type-region Astrakhan in the south-west of the USSR.

5. *Haliplus basinotatus* Zimmermann

(figs. 39-47)

Haliplus basinotatus Zimmermann, 1924: 137. Lectotype ♂ (here designated), [USSR] 'Nikolsk Ussurijsk, Ussuri geb. Mandl, R. Mouchamps det. 62, *Haliplus basinotatus* Zimm., Cotype' (ISNB) [examined].
Haliplus basinotatus ssp. *latiusculus* Nakane, 1985a: 63. Holotype ♂, Yoshii, Fukuoka Pref., Kyushu, Japan, 10.vii.1957, N. Gyotoku leg. [not examined].
Haliplus basinotatus; Zimmermann 1924: 137, Zaitsev 1953: 75, Nakane 1985a: 63.
Haliplus basinotatus ssp. *latiusculus*; Nakane 1987: 30.

Diagnosis

This species can be distinguished from related species by the dark basal band on the elytra and its large size. The Japanese subspecies *latiusculus* should differ from the continental form by having 'the front margin of pronotum not or scarcely rounded-produced forwards and the punctuation and elytral pattern appearing somewhat different' (Nakane 1985a).

Description

Length 3.5-4.0 mm, width 1.9-2.1 mm. Body widest just behind the well pronounced shoulders (fig. 39).

Head. – Yellow to yellow-red, vertex usually darkened and nearly unpunctured, frons punctured. Distance between the eyes 1.3-1.4 × eye-width. Antennae (fig. 40) and palpi yellow-brown.

Pronotum. – Yellow to yellow-red, front margin somewhat darkened or with a small brown blotch. Lateral borders slightly concave to slightly convex with very fine margins. In the anterior part with strong and dense punctures, basal punctures not wider than elytral punctures (fig. 39).

Elytra. – Yellow to yellow-red with distinct brown to nearly black markings on the intervals, along the suture, on the apex and along the base until the sixth puncture-row. The median spots are connected to the suture, but other spots can also show connections (fig. 39). Primary punctures strong, 28-31 punctures in the first row. Secondary punctures fairly strong. All punctures darkened (fig. 41).

Ventral side. – Body yellow to yellow-red, legs yellow to yellow-red, darkened towards the brown trochanteres and coxae. Prosternal process flat, strongly and densely punctured and narrowed near the coxae (fig. 43), laterally with complete plicae (fig. 44). Metasternal process flat, in the middle behind the coxae with a shallow pit (fig. 43), moderately punctured. Setiferous striole on dorsal face of hind tibia with 11-20 punctures, sometimes in a strong groove making the separate punctures hardly recognizable, longer of the two tibial spurs about ⅔ × the length of the first tarsal segment (fig. 42).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 45-47.

Distribution (fig. 311)

Easternmost parts of the USSR (near Vladivostok), North Korea, Japan (ssp. *latiusculus*, according to Nakane 1985).

Material examined. – 5 ex.– USSR: 1 ♂, 1 ♀ (lectotype and paralectotype) (ISNB). – North Korea: 2♀, 29.vii.1956, M. Magyar, Ch'ongjin (Tshondtsin) (ISNB); 1 ex., Tumen-ula, Russia/Korea border, 14.vii.1913 (ZMUC).

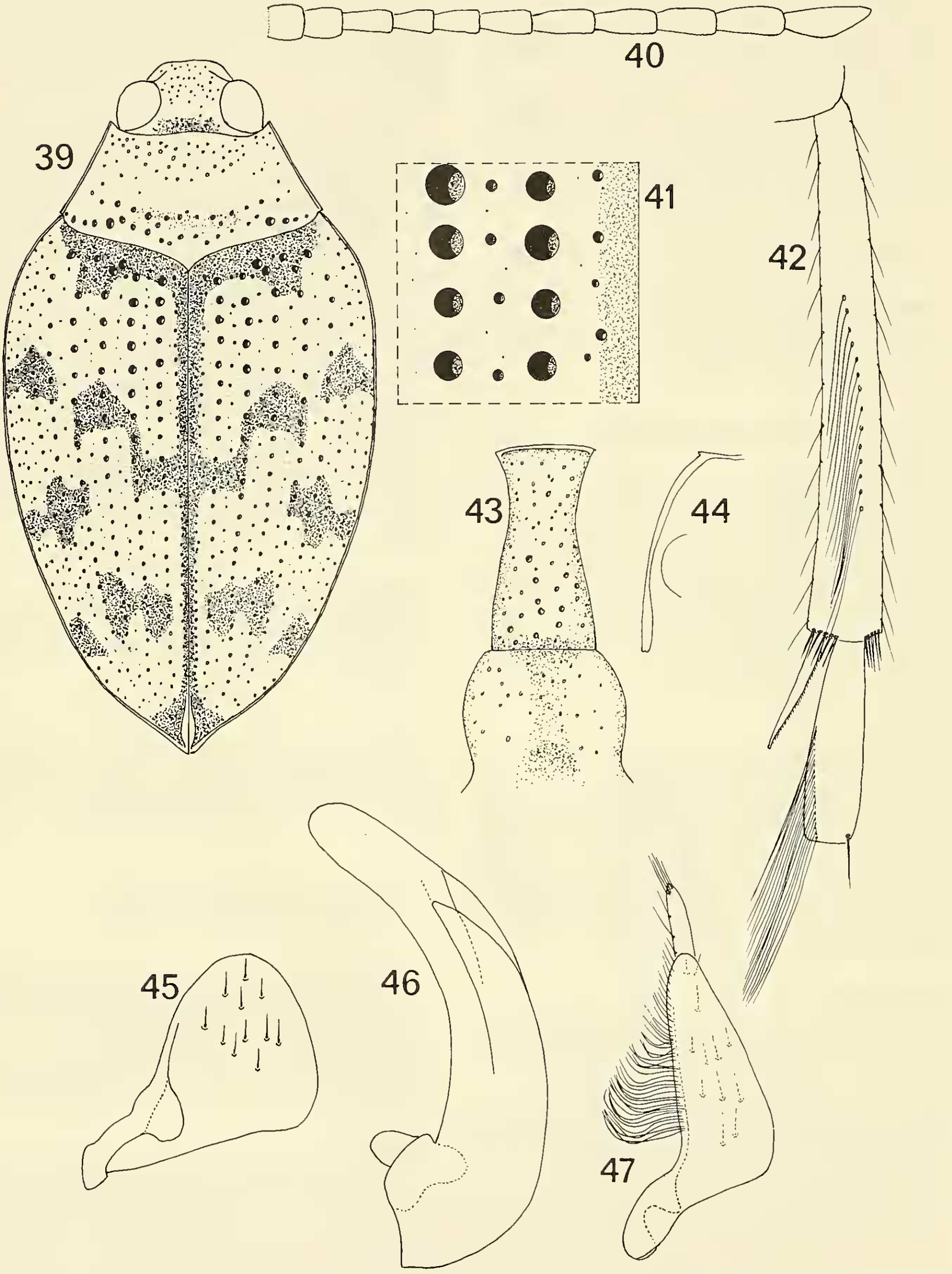
6. *Haliplus chinensis* Falkenström

(figs. 48-56)

Haliplus chinensis Falkenström, 1932: 191. Holotype ♀, 'China, N. O. Sichuan, Sven Hedins Exp. Ctr. Asien, Dr. Hummel, 22/5, Typus, *Hal. chinensis* n. sp. Typ. det. Falkenström' (NHRS) [examined].
Haliplus chinensis; Falkenström 1933: 4 (again described as n. sp.), Zaitsev 1953: 71 (as *ovalis)* and 76 (as *chinensis*).

Diagnosis

This species is closely related to *ovalis*. It seems that *ovalis* is restricted to Japan, while the continental specimens, usually considered to belong to *ovalis*, seem to be more related to *chinensis*, although only the female holotype of the latter species has the prosternal process slightly impressed. Despite the fact that all *ovalis*-like specimens that



Figs. 39-47. *Haliplus basinotatus*, lectotype. – 39, dorsal view; 40, antenna; 41, elytral punctuation; 42, dorsal side of hind tibia; 43, prosternal process; 44, lateral view of prosternal process; 45, left paramere; 46, penis; 47, right paramere.

I have seen have a flat prosternal process I think that the continental specimens belong to *chinensis*. The division between the two is mainly based on the smoothly curved penis in the continental specimens, while the specimens from Japan have the penis abruptly bent in the apical part.

Description

Length 3.9-4.2 mm, width 2.1-2.2 mm. Body oval, widest in the middle (fig. 48).

Head. – Yellow to yellow-red, dark marking on vertex, weakly punctured, on the vertex with strong punctures. Distance between the eyes 1.4-1.5 × eye-width. Antennae (fig. 49) and palpi yellow-red.

Pronotum. – Yellow, lateral borders straight, finely bordered. Densely, on the disc sparsely punctured, basal punctures widened and darkened, sometimes only slightly.

Elytra. – Yellow. Suture, apical point and 9 or 10 blotches dark, central blotch on first and third interval sometimes connected to the suture (fig. 48). Primary punctures moderately strong, about 32-36 punctures in the first row. Secondary punctures fairly strong, apically almost as strong as the primary punctures. All punctures darkened (fig. 50).

Ventral side. – Body yellow to yellow-red, elytral epipleura yellow, legs yellow-red, slightly darkened towards the coxae. Prosternal process flat to clearly depressed in the middle of the apical part, strongly and densely punctured, narrowed near the coxae (fig. 52), lateral plicae complete (fig. 53). Metasternal process flat with a pit in the middle, rather weakly punctured (fig. 52). Setiferous striole on dorsal face of hind tibia about half of the tibia length, consisting of about 14 punctures, longer of the two tibial spurs ⅔ × the length of the first tarsal segment (fig. 51).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 54-56.

Distribution (fig. 309)

China, provinces of Sichuan, Shanxi, Jiangsu, Yunnan.

Remarks

Sato (1984) mentioned a subsp. *sinicus* Balfour-Browne, but the description is unknown to me.

Material examined. – 18 ex.– China: 1 ♀, Holotype ♀. (NHRS); 1 ♂, 1 ♀, Nanjing, v.1928, J. G. Needham (ISNB); 1 ♂, 1 ♀, (Kiangau), C. F. Wu (OLML); 1 ♂, 1 ♀, 1 ex., Shanghai; 1 ex., Yunnan Sen, Excoffier, 1898 (MNHN); 4 ♂, Kelan Pt. (1 ex. labelled as type of subsp. *sinicus* Balfour-Browne) (BMNH, MNHN); 5 ex., Xinjiang (Chinkiang) (SMFD).

7. *Haliplus dalmatinus* Müller
(figs. 57-69)

Haliplus dalmatinus Müller, 1900: 113. Lectotype ♂ (here designated), [Yugoslavia, Knin] 'Kistanje, Müller D., Museo Civico di Trieste' (MSNT) [examined].

Haliplus dalmatinus var. *Weberi* Müller, 1900: 114. Lectotype ♂ (here designated), [Yugoslavia] 'Mostarsko blato, TYPUS, Museo Civico di Trieste' (MSNT) [examined].

Haliplus dalmatinus; Zimmermann 1920: 307, 1924: 37, Bertrand 1928: 87, Scholz 1929: 16, Guignot 1933: 241, Burmeister 1939: 212, Zaitsev 1953: 71, Gueorguiev 1958: 44, Franciscolo 1972: 63, Ienistea 1978: 294.

Haliplus dalmatinus var. *Weberi*; Zimmermann 1920: 308, 1924: 37, Bertrand 1928: 87, Scholz 1929: 16, Guignot 1933: 241, 1947: 51.

Diagnosis

This species is closely related to *fulvus*, but the latter has shorter metatarsi, a more narrowed prosternal process, in the males a longer digitus on the right paramere and generally a larger size.

Description

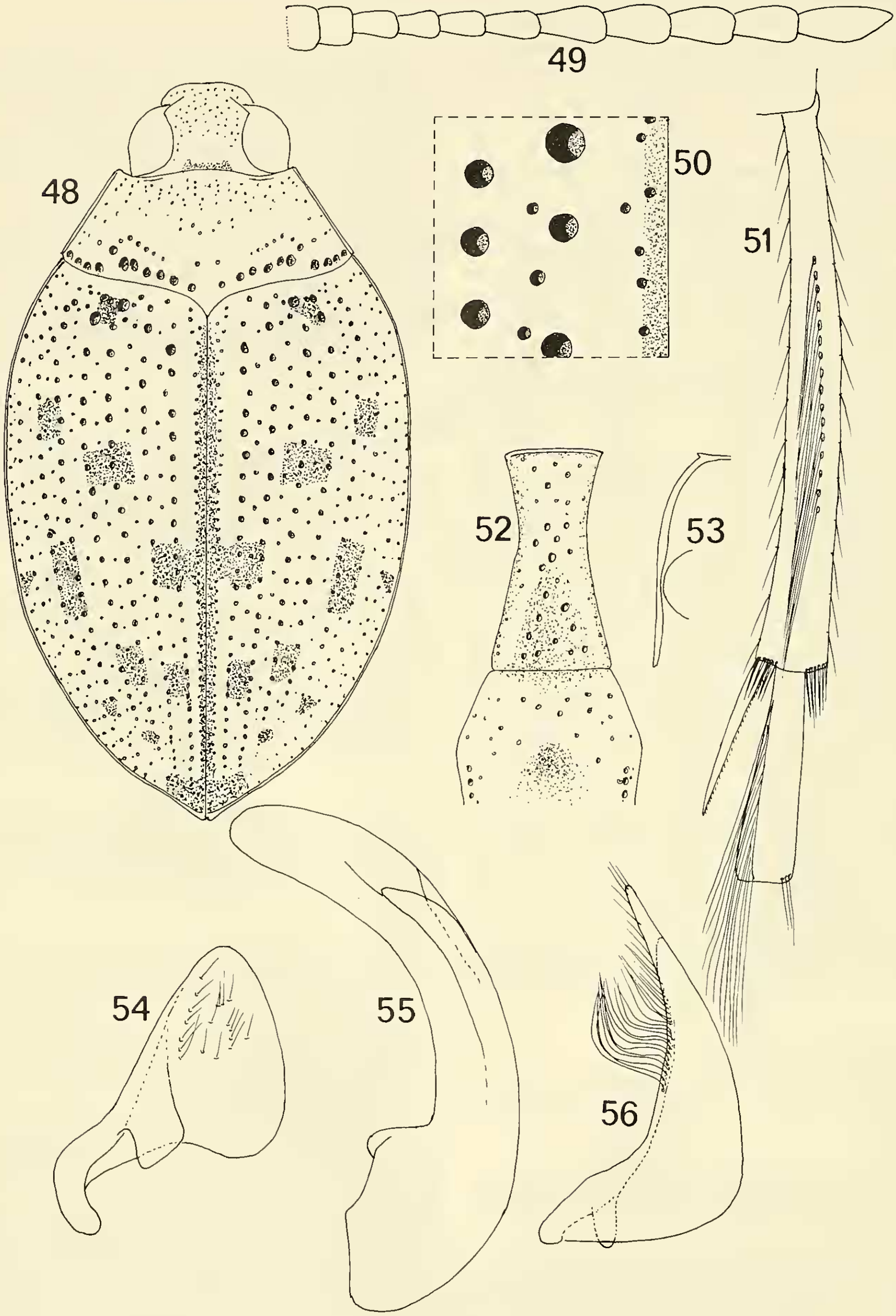
Length 3.2-3.9 mm, width 1.8-2.2 mm. Body oval, sides somewhat parallel, widest in the middle (fig. 57).

Head. – Yellow-red with dark vertex, weakly and sparsely, behind the eyes stronger and more densely punctured. Distance between the eyes 1.4-1.7 × eye-width. Antennae (fig. 58) and palpi yellow-red.

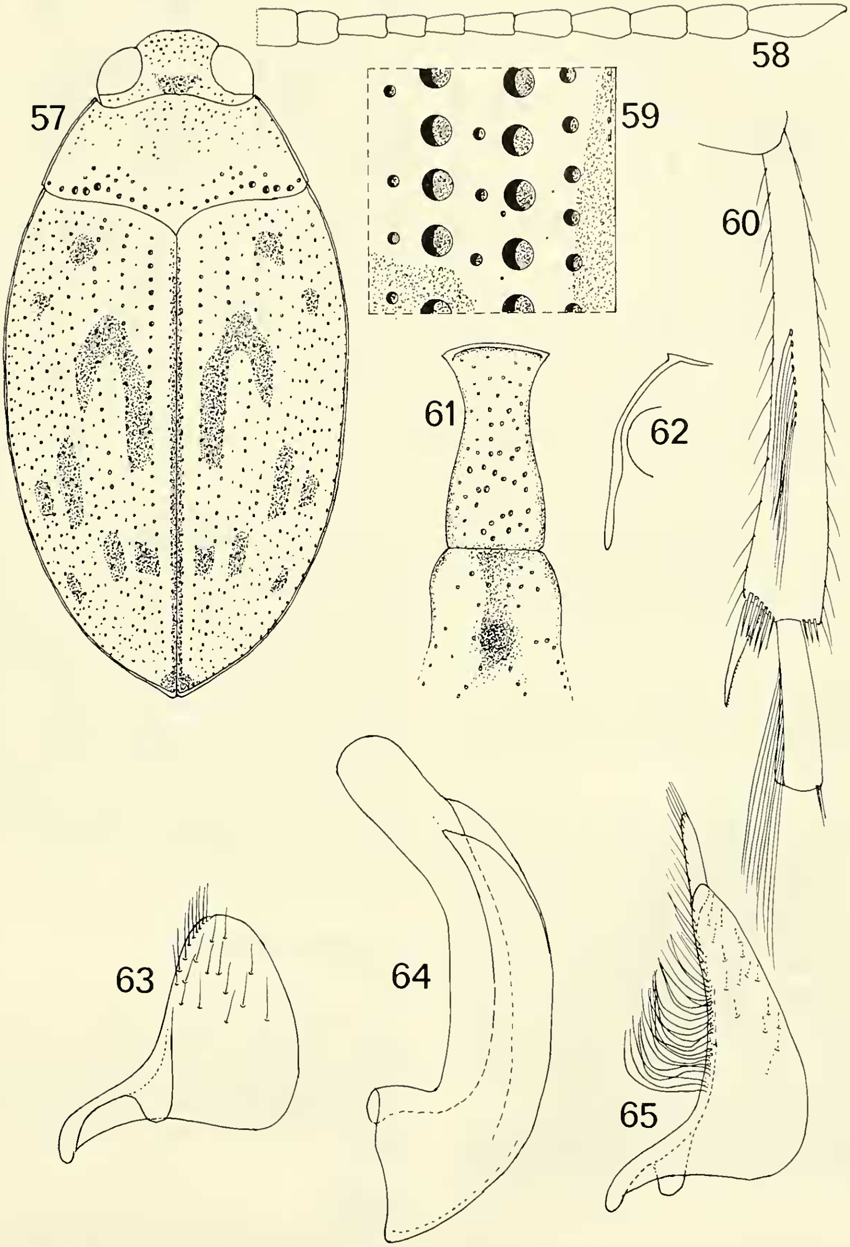
Pronotum. – Yellow, lateral borders straight to slightly convex, finely bordered, except in the middle fairly strongly punctured, basally with a row of widened punctures, basal and discal punctures darkened.

Elytra. – Yellow with variable pattern of brown blotches in the even intervals, sometimes connected to each other, most of the suture and apex darkened (figs. 57, 66-69). Fairly strong primary puncture-rows, about 30 punctures in the first row. Secondary punctures relatively strong. All punctures darkened (fig. 59).

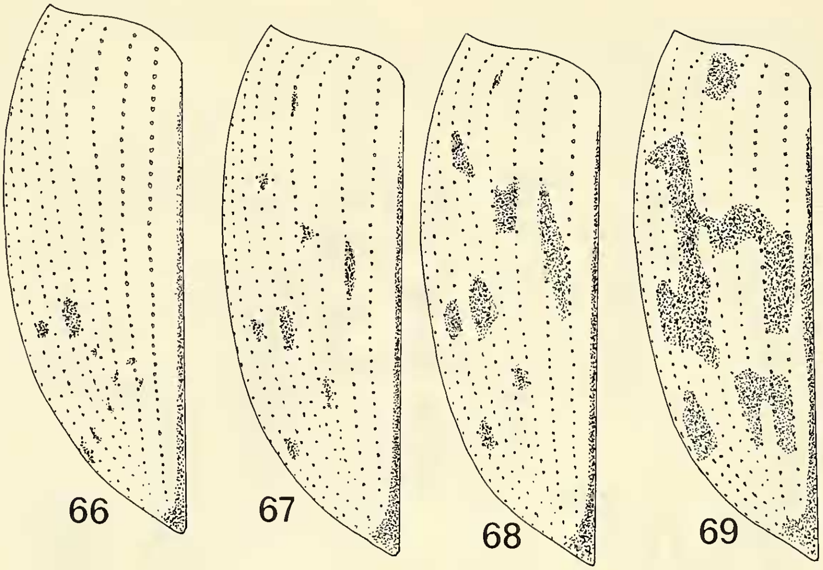
Ventral side. – Body yellow-red, elytral epipleura yellow, legs yellow-red to brown towards the coxae. Prosternal process flat, rather strongly punctured, narrowed near the coxae (fig. 61), lateral plicae complete (fig. 62). Metasternal process flat or slightly grooved, shallow pit in the middle, sparsely punctured (fig. 61). Setiferous striole on dorsal face of hind tibia with 4-7 punctures, longer of the two tibial spurs ½ to ⅔ × the length of the first tarsal segment (fig. 60). Length of hind tarsus 1.3-1.5 × the tibia length, first tarsal segment 1.6-1.7 × the length of the second segment.



Figs. 48-56. *Haliplus chinensis* (48-53, holotype; 54-56, from Nanjing). – 48, dorsal view; 49, antenna; 50, elytral punctuation; 51, dorsal side of hind tibia; 52, prosternal process; 53, lateral view of prosternal process; 54, left paramere; 55, penis; 56, right paramere.



Figs. 57-65. *Haliplus dalmatinus*, lectotype. – 57, dorsal view; 58, antenna; 59, elytral punctuation; 60, dorsal side of hind tibia; 61, prosternal process; 62, lateral view of prosternal process; 63, left paramere; 64, penis; 65, right paramere.



Figs. 66-69. *Haliplus dalmatinus*, elytra. – 66, from Kistanje; 67, from Zara; 68, from Knin; 69, from Skutari.

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 63-65, length of distal process of right paramere $1/5$ × the length of the basal part (fig. 65).

Distribution (fig. 301)

Along the coast of Yugoslavia and Albania, on the island Corfu (Greece), Turkey, Italy? (identification not sure).

Remarks

Since the description of this species various authors have regarded it as a variety of *fulvus*. Some authors considered *dalmatinus* a variety or subspecies of *variegatus*. Although in some cases *dalmatinus* is very hard to distinguish from small specimens of *fulvus* I consider *dalmatinus* a separate species and I regard the var. *weberi* as an occasional aberration. The elytral maculation is very variable and ranges from almost absent to very extended. One of the syntypes of *Haliplus zimmermanni* from Italy might belong to this species.
Specimens from Zadar (Zara), labelled as type, are not considered to belong to the syntype-series as this locality is not mentioned in the original description.

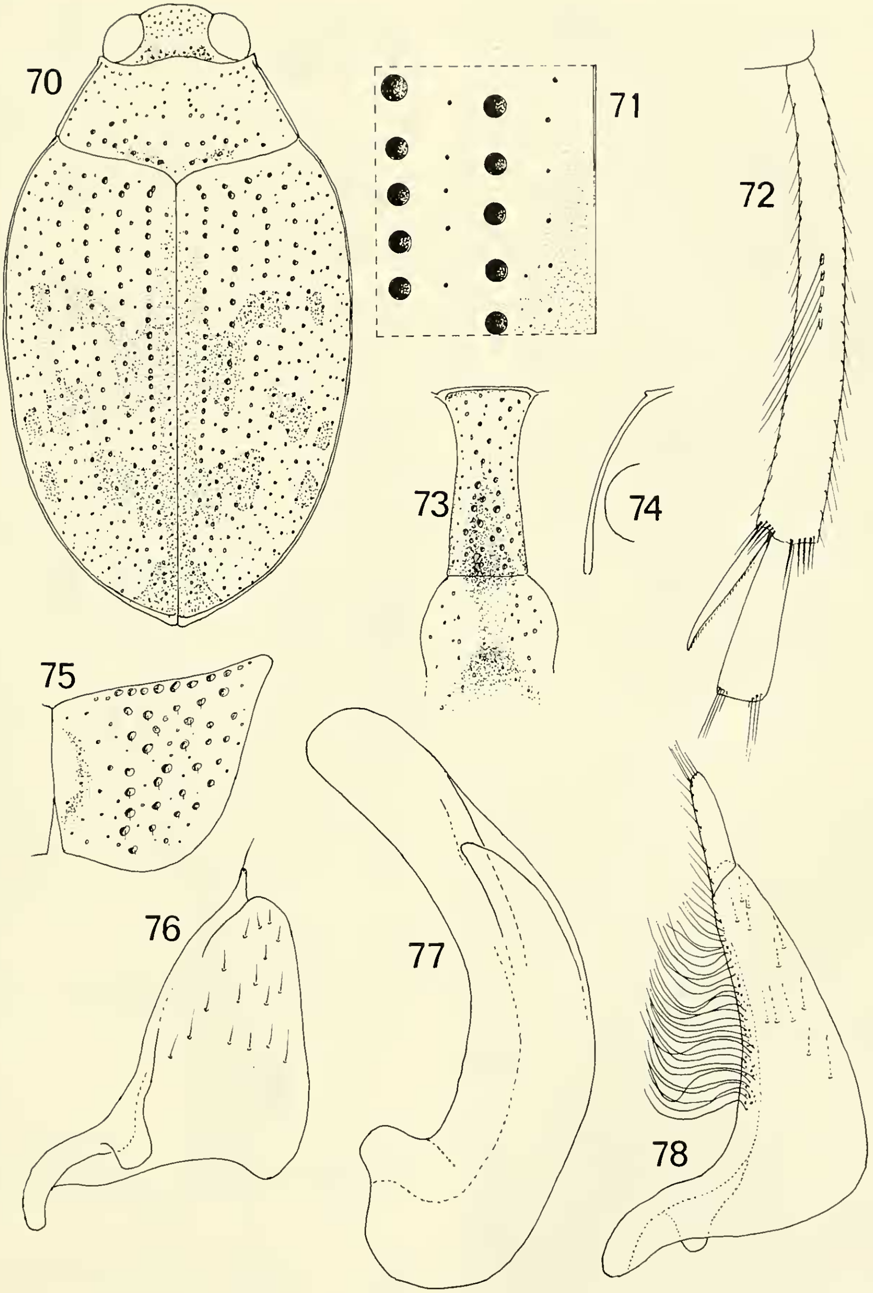
Material examined. – 36 ex. – Yugoslavia: 3♂, 2♀ (lectotype and paralectotypes); 3 ex., surr. of Zadar (Zara), Müller, (1 labelled as Typus); 2 ex., Krk (Veglia), Netolitzky; 1 ex., Dalmatia, Rab (Arbe), 20.ix.1910 (MSNT); 1 ex. (paralectotype), Knin (Kistanje), Müller D., Dalmatin det. J. Müller m, Cotypus (ZSMC); 1 ♂ (paralectotype), Knin D., Müller, Cotypus; 1 ex., surr. Zadar (Zara), Müller, Cotypus; 1 ♂, Dalmatia; 1 ♂, Dalmatia, Omis (Almissa), v.1911, Schatzm.; 3 ex. (lectotype and paralectotypes of *dalmatinus* var. *weberi*), Mostarsko blato, Typus, *Haliplus* v. *Weberi* (MSNT); 1 ex., Sinj, Dalmatia (NHMW). – Albania: 2 ♂, Shkodër (Skutari), l. See-Ufer; 2 ♂, Vraka near Shkodër (NHMW). – Greece: 1 ex., Kérkira (Corfu), J. Sahlb., 1035, syntype *Haliplus leopardinus* Sahlberg (1900) (ZSMC). – Turkey: 3 ♂, 2 ♀, Yüksekova, 3.vi.1987, M. Jäch; 5 ♂, Kastamonu, 25.vi.1989, M. Jäch (NHMW). – Italy : 1 ♀ (syntype of *Haliplus zimmermanni* Gschwendtner, 1921), Salo, 23.v.1909, Type 1921, det. L. Gschw., Type, *Haliplus ?dalmatinus* Müller det. B. J. v. Vondel 1987 (ZSMC).

8. *Haliplus davidi* sp. n.
(fig. 70-78)

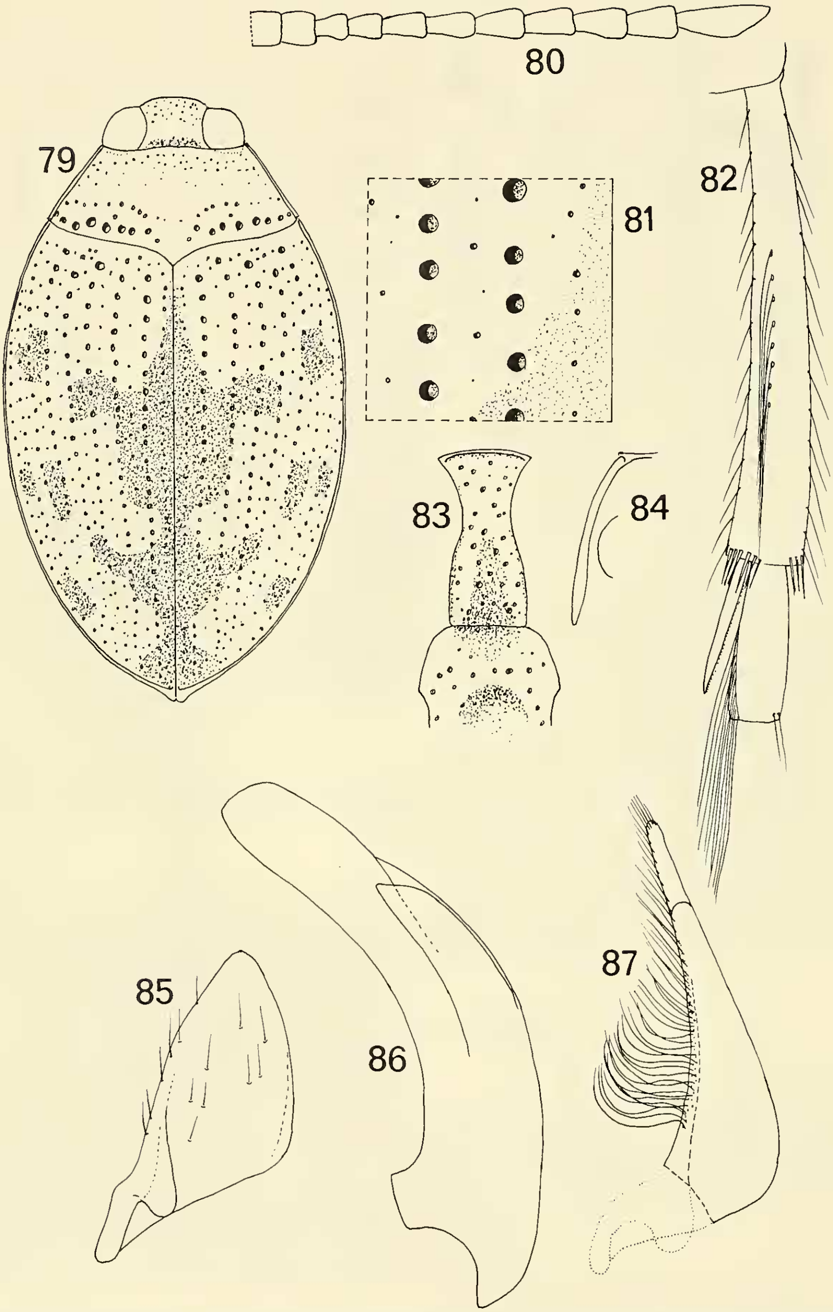
Type material: Holotype ♂, [China, Beijing] 'Nord Pekin, A. David, 1865, Museum Paris, *Haliplus Sharpi* Westw., M. Régimbart det. 1898, 227.65 [round label]' (MNHN); Paratype ♀, China, Yunnan (MNHN); Paratype ♂, Beijing (Peping), C.F. Wu (OLML); Paratype ♂, Heilongjiang (Mandsch.), Harbin, 28.ix.1930, v. Jettmer (ZMHB).

Diagnosis

Male specimens can be distinguished from *diruptus* by the presence of a digitus on the left paramere. I am not always able to separate the females of these species.



Figs. 70-78. *Haliplus davidi*, holotype. – 70, dorsal view; 71, elytral punctuation; 72, dorsal side of hind tibia; 73, prosternal process; 74, lateral view of prosternal process; 75, hind coxal plate; 76, left paramere; 77, penis; 78, right paramere.



Figs. 79-87. *Haliplus diruptus*, holotype. – 79, dorsal view; 80, antenna; 81, elytral punctuation; 82, dorsal side of hind tibia; 83, prosternal process; 84, lateral view of prosternal process; 85, left paramere; 86, penis; 87, right paramere.

Description

Length 3.2 mm, width 1.7 mm. Body oval, widest in the middle (fig. 70).

Head. – Yellow-brown, brown blotch on vertex, densely punctured, unpunctured band between the hind parts of the eyes. Distance between the eyes 1.3 × eye-width. Antennae yellow (missing in holotype), palpi yellow-brown.

Pronotum. – Yellow-brown. Lateral borders straight, clearly bordered. Width at the base 2.0 × the length in the middle and 1.6 × the width in front. Weakly and densely, along the base more strongly punctured, some basal punctures darkened. Beside the middle of the base slightly impressed (fig. 70).

Elytra. – Yellow-brown, with darkened suture and apex and several blotches (fig. 70). Primary puncture-rows moderately strong, wider near the base, basal punctures in the second to fourth row widened, about 35 punctures in the first row. Secondary punctures moderately strong, in some intervals very sparse, accompanied by very small punctures (fig. 71), all punctures darkened.

Ventral side. – Yellow-red to yellow-brown, elytral epipleura yellow, legs yellow-brown, some darkening towards the coxae. Prosternal process at the apex strongly impressed, coarsely punctured, posteriorly little narrower than anteriorly, slightly narrowed near the coxae (fig. 73), lateral plicae complete (fig. 74). Metasternal process grooved and strongly impressed in the middle, rather strongly punctured (fig. 73). Coxal plates strongly and densely punctured, small punctures between the normal ones, which are provided with hairs, along the suture with a weakly punctured area, apical parts of the plates dilated (fig. 75). Setiferous striole $\frac{1}{5}$ of the tibia length, with about 5 punctures, longer of the two tibial spurs ¾ the length of the first tarsal segment (fig. 72).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 76-78, left paramere with a short solid digitus.

Etymology. – Named after the collector A. David.

Distribution (fig. 312)

Only known from China: Yunnan, Beijing and Harbin.

9. *Haliplus diruptus* Balfour-Browne
(figs. 79-90)

[*Haliplus simplex* sensu Régimbart 1899, nec Clark 1863. Misidentification].

Haliplus diruptus Balfour-Browne, 1946: 436. Holotype ♂ 'China, Tientsin' [Tianjin] 'F. M. Thomson, 1904-229, *Haliplus simplex* Rég.-Zimm., *Haliplus diruptus* nom. nov. J. Balfour-Browne det., Type' (BMNH) [examined].

Haliplus simplex; Zimmermann 1924: 136, Takizawa 1931: 142, Zaitsev 1953: 74, Sato 1960: 252, 1984: 2, Cho 1969: 167, Yoon 1988: 621.

Haliplus diruptus; Guignot 1954: 563.

Diagnosis

A very variable species. Specimens with and without black blotches or bands on the base of the elytra and specimens with weak or with very strong and close punctures on the head are considered to belong to this species. Specimens with a very reduced and weakened maculation resemble *davidi*, from which males can be distinguished by the lack of a small solid digitus on the left paramere, but distinguishing females can be problematic.

Description

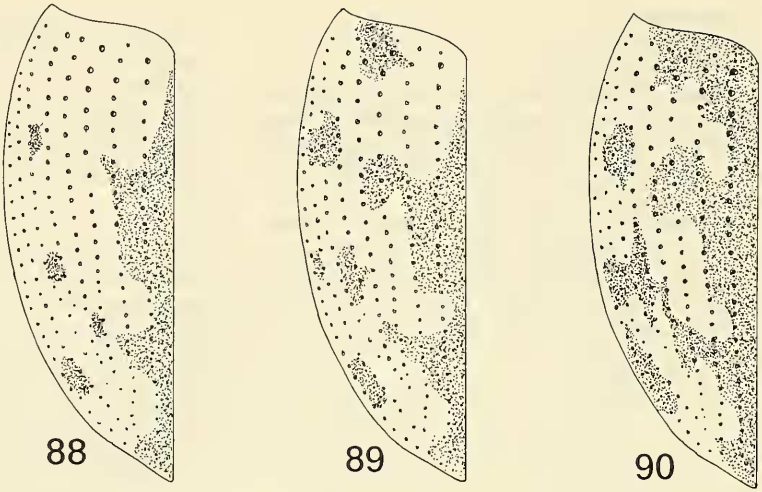
Length 2.8-3.5 mm, width 1.6-2.0 mm. Body oval, widest in the middle (fig. 79).

Head. – Yellow to yellow-brown, vertex slightly darkened, puncturation weak and fairly sparse to strong and dense. Distance between the eyes 1.3-1.5 × eye-width. Antennae (fig. 80) and palpi yellow-red.

Pronotum. – Yellow to yellow-red. Lateral borders straight to slightly convex, finely bordered. Punctures moderately strong to strong along the base and in the anterior central part, basal and anterior punctures darkened, remaining punctures sometimes darkened.

Elytra. – Yellow to yellow-brown, variable maculation: darkening along suture and on apex, a central blotch on the suture and small blotches on the even intervals; in extreme forms the maculation can be very extended and includes a large blotch or even a complete band along the base (figs. 88-90). Primary punctures moderately strong, first row slightly weaker than second to fourth or even fifth row, 30-40 punctures in the first row. Secondary punctures moderately strong, rows consisting of normal and very small ones, sometimes very strong along suture. All punctures darkened (fig. 81).

Ventral side. – Body yellow to yellow-brown, elytral epipleura yellow, legs yellow to yellow-brown, slightly darkened near the coxae. Prosternal process clearly impressed in the apical part, strongly narrowed near the front coxae (fig. 83), lateral plicae complete (fig. 84), fairly strongly punctured. Metasternal process flat with a pit in the middle, sparsely punctured (fig. 83). Setiferous striole on dorsal face of hind tibia about ⅓ × the tibia length, containing about 8 punctures, longer of the two tibial spurs about ¾ × the length of the first tarsal segment (fig. 82).



Figs. 88-90. *Haliplus diruptus*, elytra. – 88, from Beijing; 89, 90, from Tonkin.

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 85-87.

Distribution (fig. 311)

Easternmost part of China, provinces of Hebei, Heilongjiang, Hunan and Jiangsu. Extreme southeastern part of the USSR: Maritime Territory. Vietnam. Guignot (1954) gives Burma, Shan State.

Material examined. – 81 ex. – China: 1 ♂, Holotype; 1 ♀ (paratype), Tianjin (Tientsin), vi.1902, F. M. Thomson; 1 ♂, Harbin, 25.viii.1952 (BMNH); 1 ♂, 1 ♀, Beijing (Peping), C. F. Wu (OLML); 1 ♂, 1 ♀, Tianjin (Tientsin) (SMFD); 1 ex., Tianjin (Tien-Tsin); 1 ex., Beijing (Nord Pekin), A. David 1865; 4 ex., Shanghai; 1 ex., Hengshan (Hontsang), Weber; 1 ♂, (Zi-ka-wei) (MNHN); 1 ex., Yangzhou (Yang Chow Ku), 20.vi.1947, Sunabricotier (ISNB); 1 ♂, Beijing (Peping), C. F. Wu (OLML). – Korea: 1 ex., 11.vii.1956, M. Magyar, Sariwon, Type, *Haliplus sharpi* var. *homologus* n. var. cf. texte, R. Mouchamps det. 63 [unpublished name] (ISNB). – Vietnam: 62 ex., Tonkin, Hoa Binh region, vii.1940 (part of material), A. de Cooman (ISNB, MNHN). – Without locality: 1 ex. (MNHN).

10. *Haliplus excoffieri* sp. n.
(fig. 91-101)

Type material: Holotype ♂, [China] 'Yunnan-Sen, Mgr Excoffier, 1898, Dr. Régimbt vidit 1898, Museum Paris ex coll. Oberthür'. Paratypes: 1 ♂, 3 ♀, same data (MNHN).

Diagnosis

This species is closely related to *chinensis* and *ovalis*, but the distance between the eyes is usually less than 1.4 × eye-width, the darkened suture is only reaching to the first secondary puncture-row and in the males the penis is clearly widened before the apex.

Description

Length 3.7-3.8 mm, width 1.9-2.0 mm. Body oblong oval, tapering apically, widest in or just before the middle (fig. 91).

Head. – Brown, dark marking on vertex, rather densely punctured, unpunctured band between the hind parts of the eyes. Distance between the eyes 1.2-1.4 × eye-width. Antennae yellow to yellow-brown (fig. 92), palpi yellow-brown.

Pronotum. – Yellow to yellow-brown, lateral borders straight, clearly bordered. Width at the base about 2.0 × the length in the middle and 1.6 × the width in front. Sparsely, anteriorly densely, basally strongly punctured, on the disc almost unpunctured. About ten of the darkened basal punctures widened, sometimes slightly impressed along the central part of the base (fig. 91).

Elytra. – Yellow to yellow-brown, suture darkened until the secondary puncture-row, dark blotches on the apex and in mainly the even intervals. Primary puncture-rows moderately strong, second to fourth puncture-row getting stronger basally, 32-36 punctures in the first row. Secondary puncture-row along the suture rather weak, but very dense in the apical half, on the other intervals sometimes relatively strong (fig. 93). All punctures darkened.

Ventral side. – Yellow to yellow-red, elytral epipleura yellow, legs yellow-brown, darkened towards the coxae. Prosternal process slightly convex, strongly narrowed near the coxae, densely punctured (fig. 96), lateral plicae complete (fig. 97). Metasternal process flat, strong impression in the middle, weakly punctured (fig. 96). Coxal plates strongly punctured, along the suture weakly punctured (fig. 98). Hind margins of fifth and sixth abdominal segment with complete double puncture-rows (fig. 98). Setiferous striole almost half of the tibia length, with about 10 groove-like connected punctures, longer of the two tibial spurs ⅔ the length of the first tarsal segment, tibia 3 × the length of the first tarsal segment (fig. 95).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on the ventral side. Penis and parameres as in figs. 99-101.

Etymology. – This species is named after the collector Mgr J. C. Excoffier.

Distribution (fig. 312)

Only known from China, Yunnan-province.

11. *Haliplus eximis* Clark
(figs. 102-110)

Haliplus eximis Clark, 1863: 418. Syntypes, Korea, Clark (depository unknown; probably in SAMA or MAMU).
Haliplus modestus Zimmermann, 1924: 139. Holotype ♂, 'Sumatra, Type, Holotype Staatssamml. München' (ZSMC) [examined]. Syn. n.
Haliplus hiogoensis Kano & Kamiya, 1931: 1. Types burned during World War II (Dr. T. Nakane, pers. comm.) [not examined].
Haliplus emmerichi Falkenström, 1936: 79. Holotype ♀, [Kangdin, Sichuan] 'Nitou Tatsienlu, Szechuan China , Typus, *Haliplus Emmerichi* Falk. ♀, det. Falkenström' (NHRS) [examined].
[*Haliplus flavicollis*; auctt., nec Sturm 1834: Wu 193:342. Misidentification].
Haliplus eximis; Zimmermann 1920: 305, 1924: 132, Takizawa 1931: 140, Guignot 1950: 97, Zaitsev 1953: 77, Cho 1969: 166, Sato 1984: 2, Nakane 1985a: 63, 1985b: 40, 1987: 29, Yoon 1988: 623.
Haliplus modestus; Zimmermann 1927: 2.
Haliplus hiogoensis; Sato 1984: 2, Nakane 1985b: 40.
Haliplus emmerichi; Guignot 1950: 97, Zaitsev 1953: 69, Sato 1984: 2.

Diagnosis

This species can be distinguished from related species in the East Palaearctic and Oriental region by the total lack of maculation between the elytral puncture-rows. It resembles the West Palaearctic *flavicollis*, which however lacks the lateral plicae in the anterior part of the prosternal process.

Description

Length 3.4-3.9 mm, width 1.9-2.1 mm. Body oval, widest in or just before the middle (fig. 102).

Head. – Yellow-brown to rust-coloured, moderate weakly punctured. Distance between the eyes 1.3-1.4 × eye-width. Antennae (fig. 103) and palpi yellow-brown.

Pronotum. – Yellow to rust-coloured. Lateral borders straight to slightly convex, bordered, basally wider than base of elytra, strongly tapering anteriorly. Width 2.1-2.2 × the length in the middle. With strong punctures except on the unpunctured disc, basal punctures partly widened, basal and anterior punctures darkened.

Elytra. – Yellow to rust-coloured. Strong primary puncture-rows, about 32 punctures in the first row. Secondary punctures relatively strong, as dense and apically almost as strong as the primary punctures (fig. 104). Except for the partly darkened suture, no markings present.

Ventral side. – Yellow, sternites yellow-brown, legs yellow-brown to rust-coloured. Prosternal process broad and flat, slightly narrowed near the coxae, strongly punctured (fig. 106), lateral plicae complete (fig. 107). Metasternal process flat with a pit in the middle, sparsely punctured (fig. 106). Setiferous striole on dorsal face of hind tibia with about 12 punctures, longer of the two tibial spurs ⅔ × the length of the first tarsal segment (fig. 105).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 108-110.

Distribution (fig. 308)

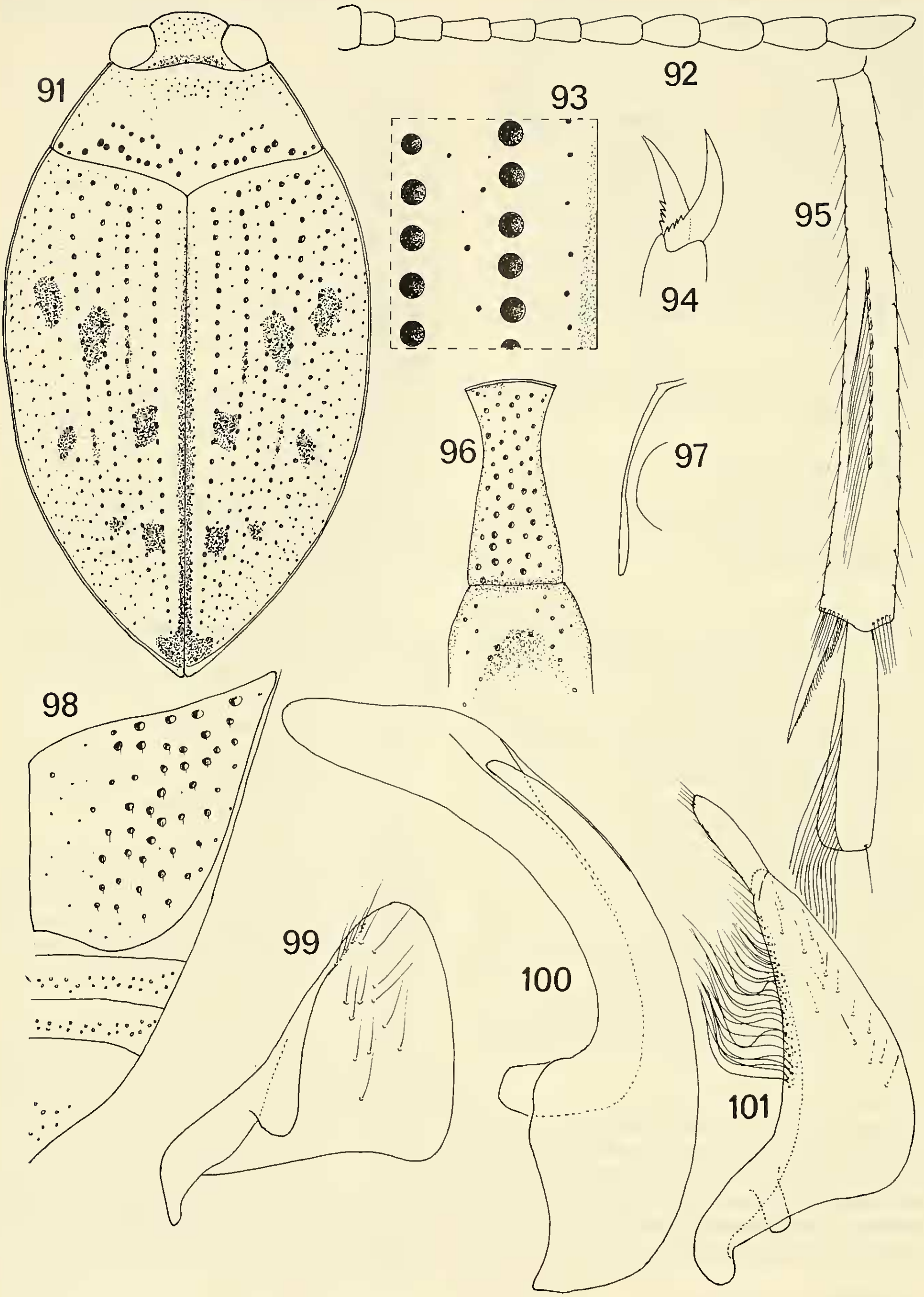
China (prov. Sichuan, Xinjiang, Zhejiang, Zaitsev (1953) gives Shanghai), Korea, Japan (Honshu, Kyushu), Vietnam, Sumatra.

Remarks

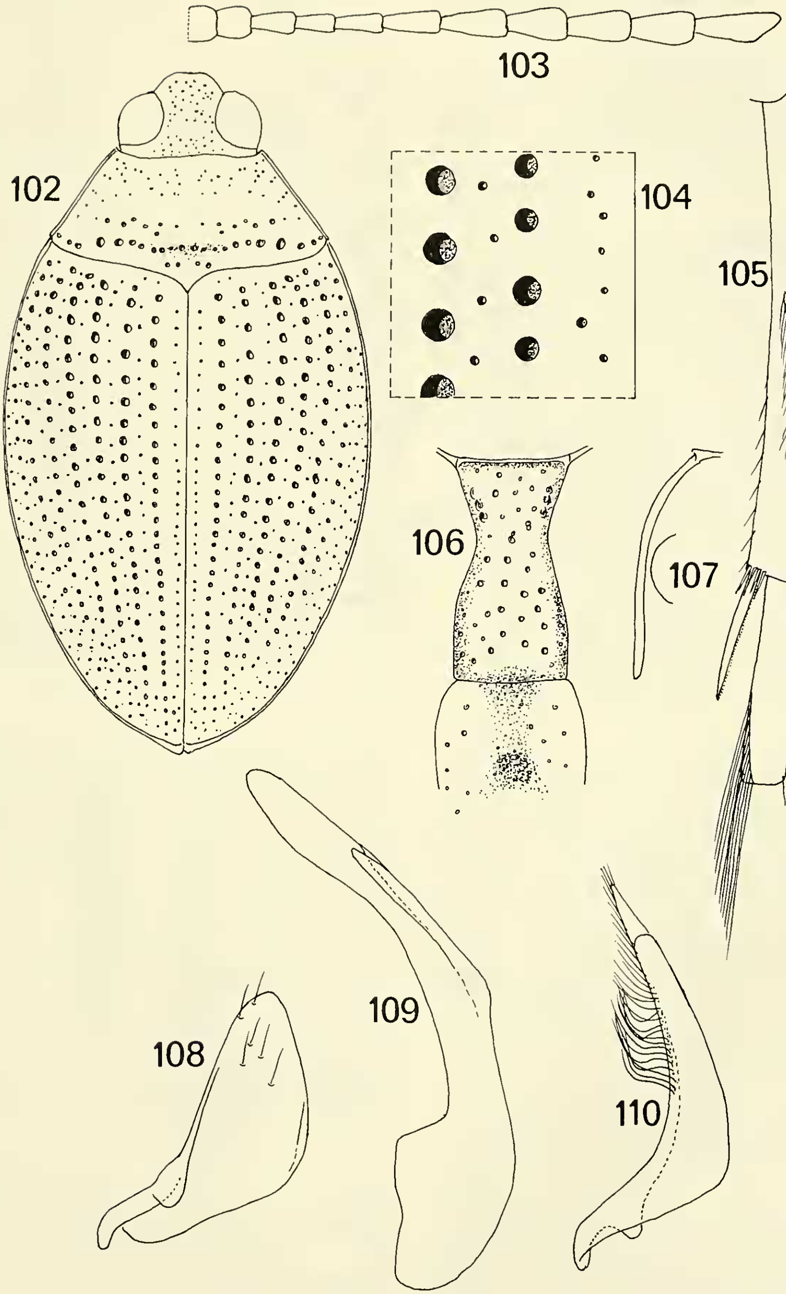
The specimen from China, present in BMNH and labelled as Type of *eximis*, does not belong to Clark's two syntypes, described from Korea. The holotype of *modestus*, described from Sumatra is here considered conspecific with *eximis*.

Material examined. – 16 ex. – China: 1 ♂, Type (BMNH); 1 ex., Kiangau, C. F. Wu (OLML); 1 ♀, Holotype *Haliplus emmerichi* (NHRS); 4 ex., North-west. China, Xinjiang (Chinkiang), Cotypus (SMFD); 1 ♂, Zhejiang, Zhoushan (Chekiang, Chusan), 15.iv.1931 (MNHN). – Japan: 10 ex., Aobadai, Aira I, Kagoshima Pref., 26.ix.1985. E. Matsui (Vondel). – Korea: 1 ex., Tshou-Bon San, 1.vii.1956, M. Magyar (ISNB). – Vietnam: 6 ex., Tam Dao, Tonkin, H.Perrot; 1 ex., Tonkin, Hoa Binh, iii.1940, A. de Cooman (ISNB). – Indonesia: 1 ♀, holotype of *modestus* (ZSMC).

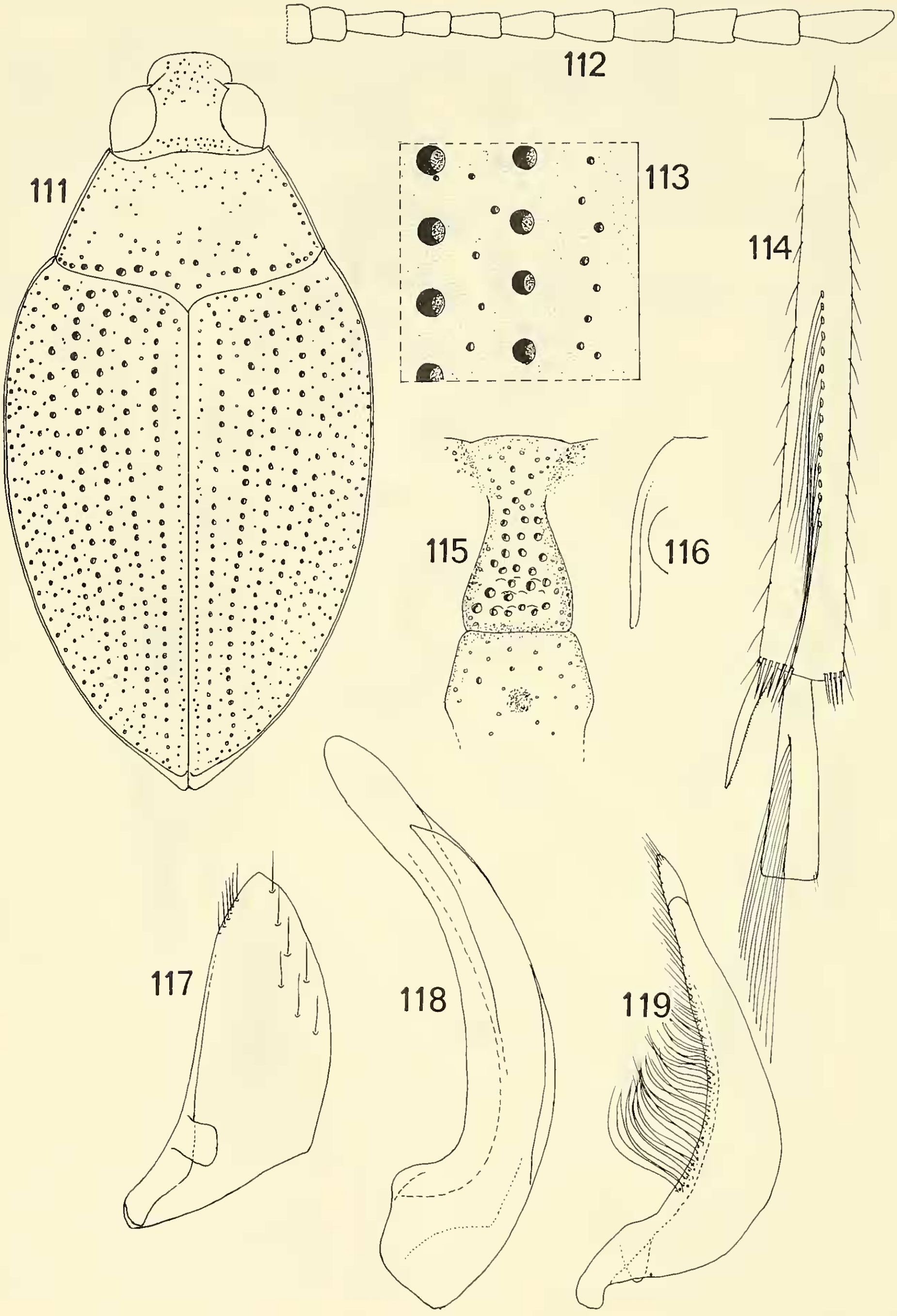
12. *Haliplus flavicollis* Sturm
(figs. 111-119)



Figs. 91-101. *Haliplus excoffieri*, holotype. – 91, dorsal view; 92, antenna; 93, elytral punctuation; 94, fore claws; 95, dorsal side of hind tibia; 96, prosternal process; 97, lateral view of prosternal process; 98, hind coxal plate and sternites; 99, left paramere; 100, penis; 101, right paramere.



Figs. 102-110. *Haliplus eximis*, China. – 102, dorsal view; 103, antenna; 104, elytral punctuation; 105, dorsal side of hind tibia; 106, prosternal process; 107, lateral view of prosternal process; 108, left paramere; 109, penis; 110, right paramere.



Figs. 111-119. *Haliplus flavicollis*, Hendrik Ido Ambacht, Netherlands. – 111, dorsal view; 112, antenna; 113, elytral punctuation; 114, dorsal side of hind tibia; 115, prosternal process; 116, lateral view of prosternal process; 117, left paramere; 118, penis; 119, right paramere.

Haliplus flavicollis Sturm, 1834: 150. Types not located, probably lost as most of the Sturm-types [not examined].

[*Haliplus ferrugineus*; sensu auctt., nec Linnaeus, 1767. Misidentification].

[*Haliplus impressus*; sensu auctt., nec Fabricius,1787. Misidentification].

Haliplus flavicollis var. *pallida* Semenov, 1904: 202. Types probably in ZMAS [not examined].

Haliplus flavicollis var. *expallidus* Zaitsev, 1907: 122 (Replacement name for *pallida* Semenov).

Haliplus unicolor Fiori, 1914: 188. Types not located [not examined].

Haliplus flavicollis; Aubé 1836: 24, 1838: 12, Schaum 1848: 42, Thomson 1854: 183, Seidlitz 1887: 31, Müller 1900: 115, Apfelbeck 1904: 361, Fiori 1904: 196, Zimmermann 1920: 305, 1924: 132, Guignot 1928: 143, 1933: 230, 1947: 50, Kinel 1929: 219, Scholz 1929: 15, Kolossov 1931: 116 (var. *russkyi* Stange, nom. nud.), Balfour-Browne 1936: 75, 1938: 12, 1940: 148, 1951: 1, 1953: 5, F. Burmeister 1939: 212, E. Burmeister 1982: 94, 1987: 184, Csiki 1946: 559, Zaitsev 1953: 68, Gueorguiev 1960: 23, Lindroth 1960: 42, Freude 1971: 15, Seeger 1971a: 409, 1971b: 532, 1971c: 165, Franciscolo 1972: 61, 1979: 117; Jackson 1973: 253, Ienistea 1974: 208, 1978: 294, Minoransky & Dzumailo 1974: 26, Galewski 1976: 31, Konev 1976: 56, Mateleshko 1977: 68, Fichtner 1981: 327, Holmen 1981: 2, 1987: 114, Leblanc 1984: 8, Lundberg 1986: 11, Zakharenko & Moroz 1988: 283, Belyashevskiy 1989: 124, Vondel 1989a: 58, 1989b: 17.

Haliplus flavicollis var. *expallidus*; Zimmermann 1920: 305, Guignot 1933: 239, Zaitsev 1953: 68.

Haliplus unicolor; Burmeister 1939: 214.

Diagnosis

This species is related to *eximis* and *rubidus*. From *eximis* it can be distinguished by the lack of lateral plicae in the anterior part of the prosternal process. In *rubidus* the basal elytral punctures are larger than the distance between the punctures of the first and second row in the basal part, while in *flavicollis* these punctures are clearly smaller than that distance. In specimens from Morocco, however, that difference is less clear. The males of *flavicollis* have the left paramere narrower at the base than in *rubidus*.

Specimens with vague blotches on the elytra can be distinguished from *fulvus* by the lack of the lateral plicae in the anterior part of the prosternal process.

Description

Length 3.6-4.1 mm, width 1.8-2.1 mm. Body fairly slender, sometimes subparallel, widest before the middle (fig. 111).

Head. – Yellow to rust-coloured, sparsely punctured. Distance between the eyes 1.4-1.6 × eyewidth. Antennae (fig. 112) and palpi yellow to yellow-red.

Pronotum. – Yellow to rust-coloured. Lateral borders straight, finely bordered. Sparsely, anteriorly and basally more densely punctured, basal irregular puncture-row about as strong as basal elytral punctures. All punctures usually black (fig. 111).

Elytra. – Yellow to rust-coloured, strong primary puncture-rows, about 32 punctures in the first row. Secondary rows with relatively strong and between them very weak punctures (fig. 113). All punctures black. Suture weakly darkened, no clear markings on the intervals, sometimes vague blotches on the apical half.

Ventral side. – Body yellow to yellow-brown, elytral epipleura yellow, legs yellow-brown, femora darkened basally, trochanteres dark. Prosternal process flat, wide apically, strongly narrowed near the coxae (fig. 115), lateral border without plicae before the coxae (fig. 116), strongly and densely punctured. Metasternal process flat with a strong impression in the middle, sparsely punctured (fig. 115). Setiferous striole on dorsal face of hind tibia long and grooved, separate punctures hardly recognizable, longer of the two tibial spurs about ⅔ × the length of the first tarsal segment (fig. 114).

Male sexual characters. – First three tarsal segments of fore- and midlegs hardly widened laterally, slightly widened ventrally, scaly hairs on ventral side. Penis and parameres as in figs. 117-119.

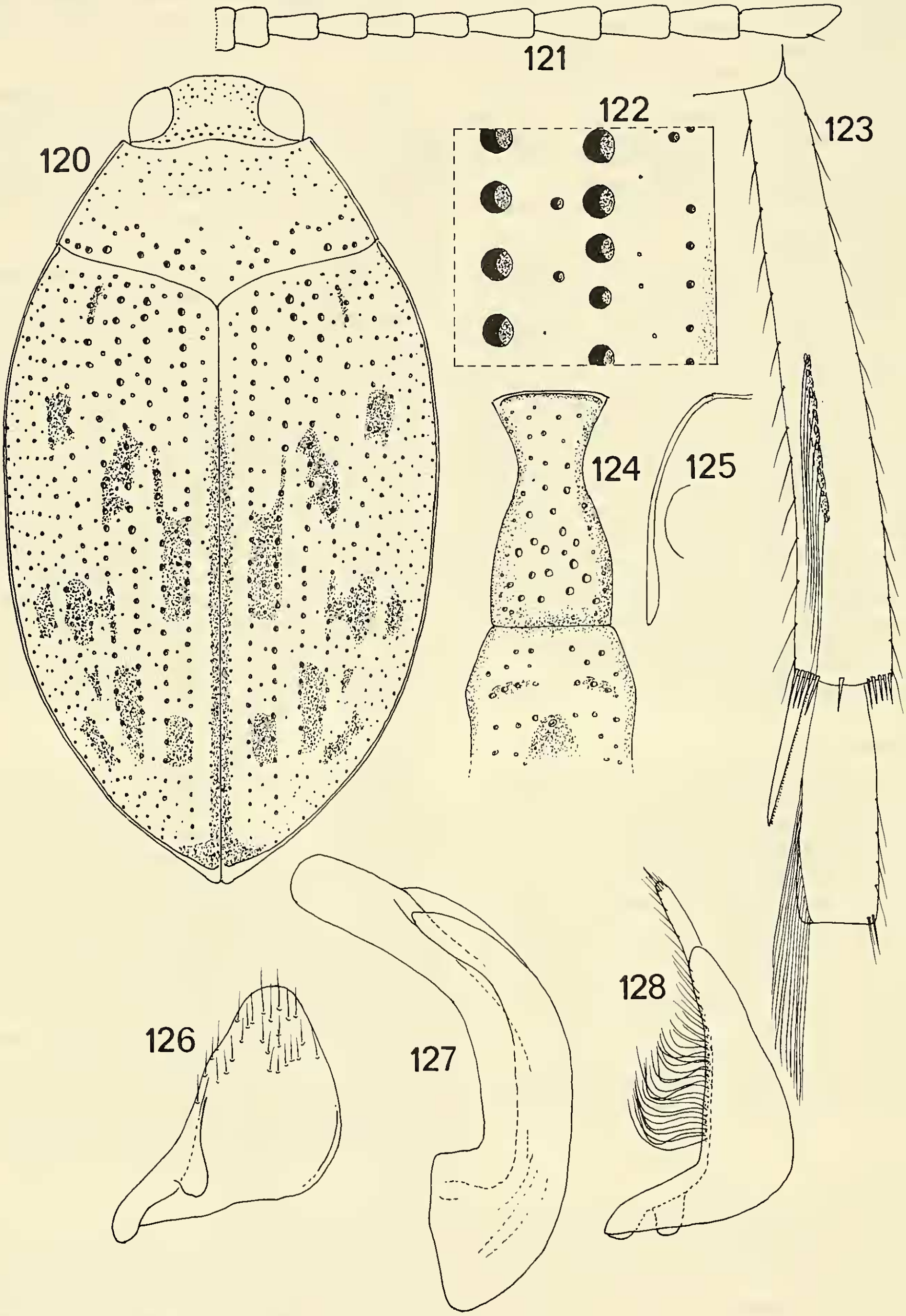
Female: Elytra completely and very densely covered with micropunctures.

Biology

In clean and clear stagnant or very slowly running water of lakes, ditches, canals and pools with rich vegetation, especially Characeae (Seeger 1971c), Najadaceae (Burmeister 1939) or *Cabomba*-beds in Kazakhstan (Konev 1976). Also recorded from brackish water. The adults feed on eggs and larvae of *Chironomidae* (Seeger 1971c), aquatic macro-invertebrates as *Asellus* (only when dead or dying), *Sialis* larvae (probably predated), dead waterbeetles, even of their own species and probably Characeae or filamentous algae. Seeger (1971a, b, c) provided much information on the life-cycle. The egg has been described by Seeger (1971a), the 2nd and 3rd-stage larvae and the pupa have been described by Bertrand (1928). This species is able to fly (Jackson 1973, taken at light).

Distribution (fig. 295)

All Europe except the north of Norway, the utmost north of Sweden, the north of Finland, Iceland, Spain and Portugal. Turkey. USSR: European part, Western Siberia except the extreme north, Transcaucasia, Kazakhstan, China (Guignot 1947), Mongolia. Records from Morocco probably concern specimens of *rubidus*, which is not always



Figs. 120-128. *Haliplus fulvus*, Gars, Austria. – 120, dorsal view; 121, antenna; 122, elytral punctuation; 123, dorsal side of hind tibia; 124, prosternal process; 125, lateral view of prosternal process; 126, left paramere; 127, penis; 128, right paramere.

easy to distinguish from *flavicollis*. Egypt? (Holmen 1987). Ali (1976) records specimens of *fulvicollis* from Iraq, but according to the characters he used in his identification-key he obviously meant *flavicollis*.

Material examined. – 881 ex. – Austria: 97 ex. (CNCI, NHMW, ZMAN, RMNH). – Belgium: 7 ex. (RIN, RMNH, Jongema). – Czechoslovakia: 20 ex. (NHMW, RMNH). – France: 23 ex. (CNCI, NHMW, RIN, RMNH, Jongema, Vondel). – Germany: 24 ex. (NHMW, ZMAN, RMNH). – Great Britain: 9 ex., (CNCI, BMNH, ZMAN, Vondel). – Greece: 2 ex. (ZMAN). – Hungary: 2 ex. (CNCI). – Ireland: 1 ex. (BMNH). – Italy: 4 ex. (CNCI, Jongema, RMNH, NHMW). – Luxembourg: 1 ex. (ZMAN). – Mongolia: 1 ♂, Üür Gol, 28.ix.1897, Frenzel (ZMHB). – Netherlands: 649 ex. (ZMAN, MOG, FNML, NHMR, RIN, RMNH, Berge Henegouwen, Cuppen, Drost, Hielkema, Huybregts, Jongema, Onder de Linden, Schilthuizen, Vallenduuk, Vondel). – Poland: 13 ex. (NHMW, RMNH). – Rumania: 1 ex. (RMNH). – Switzerland: 8 ex. (ZMAN, Rotzer). – USSR: 1 ex., Panfilov, Kazakhstan; 1 ex., Kiyev, Ukraine, 27.ix.1988, M. Jäch (NHMW). – Locality not traced or unknown: 17 ex. (BMNH, NHMW, RMNH).

13. *Haliplus fulvus* (Fabricius)
(figs. 120-131)

Dytiscus fulvus Fabricius, 1801: 271. Types not located, probably lost (Zimsen 1964: 70) [not examined].

Dytiscus interpunctatus Marsham, 1802: 429. Lectotype ♀ (here designated), *interpunctatus* (BMNH) [examined].

Haliplus lapponum Thomson, 1854: 184. Lectotype (here designated), *H. ferrugineus*, coll. Lund, *H. ferrugineus* Zett., ?syntype (MZLU, Zetterstedt-collection) [examined].

Haliplus pyraeneus Delarouzée, 1857: xcv. Types from Lac Noire near Cauterets (Hautes Pyrénées) are probably in MNHN [not examined]. Material from NHMW, labelled as TYPUS and COTYPUS is collected in 1881 and thus can not belong to the syntype-series.

Haliplus lapponum var. *niger* Seidlitz, 1887: 31. Types not located [not examined].

Haliplus fulvus var. *carlittensis* Régimbart, 1901: 323. Types probably in MNHN [not examined].

Haliplus subguttatus Crotch, 1873: 384. Syn. n.

Haliplus fulvus a. *multistriatus* Scholz, 1915: 232. Types not located [not examined].

Haliplus fulvus Sparre-schneideri Munster, 1922: 15. Lectotype ♂ (here designated), [Norway, Malselv] 'Bjerkeng, 12.6.97, *H. Schneideri* i. lit., *fulv. Schneideri* det. Ganglbauer, COTYPUS' (NHMW) [examined].

Haliplus fulvus v. *unicolor* Munster, 1922: 14. Types not located [not examined].

Haliplus salinarius Wallis, 1933: 56. Holotype ♂, [Canada] 'Oyosoos, B.C., V-4-1929' (CNCI) [examined]. Syn. n.

[*Haliplus ferrugineus*; sensu auctt., nec Linnaeus, 1767. Misidentification].

Haliplus fulvus; Clairville 1806: 220, Sturm 1834: 148, Babington 1836: 177, Erichson 1837: 183, Thomson 1854: 183, Westhoff 1881: 43, Seidlitz 1887: 31, Apfelbeck 1904: 360, Escalera 1914: 57, Zimmermann 1920: 307, 1924: 134, Bertrand 1928: 87, 1949: 25, Guignot 1928: 144, 1933: 230, 1947: 51, Scholz 1929: 16, Balfour-Browne 1936: 74, 1938: 11, 1940: 146, 1951: 4, 1953: 5, Pearce 1939: 34, F. Burmeister 1939: 212, Horion 1941: 365, Brinck 1942: 5, Strand 1944: 122, Csiki 1946: 560, Jackson 1952: 66, 1956: 87, 1973: 253, Zaitsev 1953: 70, Riha 1955: 57, Gueorguiev 1958: 44, 1960: 23, 1981: 401, Lindroth 1960: 42, Lagar Mascaro 1968: 72, Freude 1971: 15, Seeger 1971b: 558, 1971c: 165, Ienistea 1974: 208, 1978: 294, Minoransky & Dzumailo 1974: 26, Alfieri 1976: 38, Galewski 1976: 29, Konev 1976: 56, Gislason 1977: 159, Mateleshko 1977: 68, Franciscolo 1979: 119, Fichtner 1981: 327, Holmen 1981: 2, 1987: 115, Leblanc 1984: 40, Lundberg 1986: 11, E. Burmeister 1987: 184, Zakharenko & Moroz 1988: 283, Belyashevskiy 1989: 124, Vondel 1989a: 58, 1989b: 17.

Haliplus interpunctatus; Zimmermann 1920: 307.

Haliplus lapponum; Seidlitz 1887: 31, Zimmermann 1920: 308, Bertrand 1928: 87, 1949: 25, Guignot 1928: 144, 1930: 73, 1933: 231, 1947: 51, Kinel 1929: 219, Scholz 1929: 16, Balfour-Browne 1936: 74 1938: 11, 1940: 147, Burmeister 1939: 213, Pearce 1939: 34, Horion 1941: 365, Brinck 1942: 5, Strand 1944: 122, Zaitsev 1953: 71, Riha 1957: 57, Lagar Mascaro 1968: 72, Ienistea 1978: 294, Lundberg 1986: 11.

Haliplus pyraeneus; Marseul 1882: 106, Zimmermann 1920: 308, Bertrand 1928: 87, Kinel 1929: 219, Scholz 1929: 16, Burmeister 1939: 213.

Haliplus subguttatus; Blatchley 1910: 203, Roberts 1913: 101, Zimmermann 1920: 139, Wallis 1933: 54, 1973: 100, J. Balfour-Browne 1948: 158, Hatch 1953: 192, Ruette 1970: 57, Hilsenhoff & Brigham 1978: 21, White et al. 1985: 357, Larson 1987: 107.

Haliplus lapponum var. *niger*; Scholz 1929: 16, Guignot 1933: 242.

Haliplus fulvus var. *carlittensis*; Zimmermann 1920: 308, Bertrand 1928: 87, Guignot 1928: 144, 1930: 73, 1933: 242, Kinel 1929: 219, Scholz 1929: 16, Burmeister 1939: 213, Pearce 1939: 34.

Haliplus fulvus a. *multistriatus*; Zimmermann 1920: 308, Bertrand 1928: 87, Guignot 1933: 241.

Haliplus fulvus sparre-schneideri; Guignot 1933: 241, Strand 1944: 122, Zaitsev 1953: 71, Döbler 1976: 182 (as *schneideri*), Ienistea 1978: 294.

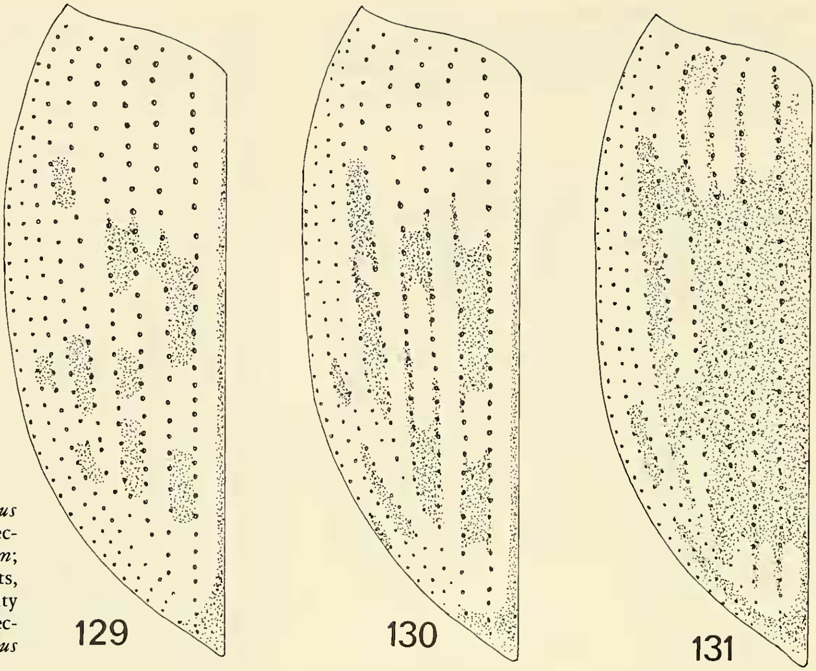
Haliplus fulvus v. *unicolor*; Falkenström 1941: 88.

Haliplus salinarius; Hatch 1953: 192, Ruette 1970: 56, Larson 1987: 107.

Haliplus ferrugineus; Gyllenhal 1808: 546, Zetterstedt 1828: 236, Stephens 1829: 40, Aubé 1836: 22, 1838: 10, Babington 1836: 176, Zimmermann 1920: 308.

Diagnosis

This species is very variable in size, maculation and coloration. Of all Haliplidae it has the largest distribution, covering most of the palaearctic and the north of the nearctic region. Mainly because of the variation in elytral maculation a number of varieties, subspecies and separate species such as *lapponum* (fig. 129) and *pyraeneus* (fig. 130) have been described. A range of intermediate forms between the latter species and *fulvus* has been examined and I can only confirm what other authors like



Figs. 129-131. *Haliplus fulvus*, elytra. – 129, lectotype of *H. lapponum*; 130, from Cauterets, France, the type locality of *H. pyraeneus*; 131, lectotype of *H. fulvus sparre-schneideri*.

Balfour-Browne (1936) and Holmen (1987) already concluded, that they belong to the same species.

Description

Length 3.6-4.5 mm, width 2.0-2.4 mm. Body long oval, widest in the middle (fig. 120).

Head. – Yellow-red, brown or rust-coloured, puncturation weak to moderately strong, between the eyes sparser, behind the eyes stronger and denser punctured. Distance between the eyes 1.6-1.9 × eye-width. Antennae (fig. 121) and palpi yellow.

Pronotum. – Yellow to rust-coloured. Lateral borders straight to slightly convex, finely bordered. Punctures moderately strong, on the disc almost absent, the basal row widened and slightly to strongly darkened.

Elytra. – Yellow to rust-coloured, very variable pattern of light to dark brown blotches in the even intervals, sometimes the blotches are hardly or not present or they are very strong and then covering nearly the entire elytra (described as *sparre-schneideri*) (fig. 131). Primary punctures moderately strong, sometimes stronger in the basal part. Secondary rows irregular and containing two types of punctures, the usual ones and very fine ones (fig. 122). All punctures darkened.

Ventral side. – Body yellow, yellow-red or rust-coloured, elytral epipleura yellow, legs yellow to rust-coloured, darkened towards the coxae. Prosternal process flat to slightly convex, narrowed near the coxae (fig. 124), lateral plicae complete (fig. 125), with moderately strong to very strong and dense punctures. Metasternal process flat with a pit in the middle (fig. 124), with moderately strong and dense punctures. Setiferous striole on dorsal face of hind tibia grooved, stretched over about ⅓ of the length, consisting of 10 to 20 often hardly recognizable punctures, longer of the two tibial spurs ⅔ × the length of the first tarsal segment (fig. 123). Length of hind tarsus, including claws, about 1.2 × the tibia length, first tarsal segment 1.5-1.9 × the length of the second segment.

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 126-128, length of the distal process of the right paramere ⅓ × the length of the basal part (fig. 128).

Biology

In clean clear or peaty stagnant or slowly running water of lakes, pools, canals, rivers and ditches with rich vegetation of especially Characeans. Even recorded from brackish water. The larvae probably feed on Characeans such as *Nitella*, while the adults are omnivorous with a diet of algae, pollen and invertebrates like Oligochaeta (Seeger 1971b). The third-stage larva was first described by Schiødte (1864). The beetle has been seen flying and has been caught at light.

Distribution (fig. 292)

All of Europe, including Iceland. USSR: European part and Siberia as far as Yakutia in the east and Transcaucasia and Kazakhstan in the south. Turkey. North Africa: Morocco, Algeria. The records of Syria (Burmeister 1939) and Iraq (Ali 1976) possibly concern *maculatus*, which is certainly a different species. Canada (states of British Columbia, Alberta, North West Territories, Saskatchewan, Manitoba, Ontario, Quebec, Nova Scotia and New-Foundland) and northern parts of the United States from west to east, southwards to about 45° N (states of Washington, Idaho, South Dakota, Minnesota, Wisconsin, Indiana and Massachusetts) (until now referred to as *salinarius* and *subguttatus*).

Remarks

Type-material of the nearctic species *subguttatus* sensu Roberts and *salinarius* Wallis has been examined and in my opinion both are conspecific with *fulvus*. For *salinarius* that possibility was already noticed by Holmen (1987). Crotch (1873) mentioned *subguttatus* referring to a Leconte manuscript, but he did not regard it as a separate species, but as a form of *cribarius* Leconte. Blatchley (1910) described it as a subspecies of *cribarius*. Roberts (1913) discovered that *subguttatus* was not conspecific with *cribarius* and described it as a separate species. His holotype is probably in AMNH. Two of his paratypes have been examined (CNCI).

Material examined. – 712 ex. – Austria: 36 ex. (RMNH, NHMW, ZMAN, OLML). – Belgium: 7 ex. (RMNH, RIN, Jongema). – Canada: 3 ex. (holotype and 2 paratypes of *salinarius*); 1 ♂, (paratype of *subguttatus*), Fraz. Val. B.C.; 1 ♂, (paratype of *subguttatus*), Antigonish, N.S. (CNCI); 44 ex. (CNCI, Vondel). – Czechoslovakia: 2 ex. (NHMW, OLML). – Denmark: 1 ex. (NHMW). – Finland: 10 ex. (RMNH, ZMAN, RMNH, NHMW). – France: 30 ex. (RMNH, ZMAN, RMNH, NHMW, BMNH, OLML, Vondel). – Germany: 39 ex. (RMNH, NHMW, ZMAN, BMNH, OLML). – Great Britain: 94 ex. (CNCI, ZMAN, BMNH, Vondel). – Greece: 1 ex. (OLML). – Hungary: 2 ex. (NHMW, ZMAN).-Ireland: 18 ex. (BMNH). – Italy: 3 ex. (CNCI). – Netherlands: 228 ex. (BMNH, ZMAN, FNML, NHMR, NHMW, RIN, RMNH, Cuppen, Drost, Hielkema, Jongema, Onder de Linden, Vondel). – Norway: 38 ex. (RMNH, ZMAN, BMNH, OLML, MZLU, RMNH); 1 ♂, (lectotype of *fulvus* var. *sparre-schneideri*), 1 ♀, (paralectotype of *fulvus* var. *sparre-schneideri*), Bjerkeng, ix.1878, Schneider, *Haliplus Sparre-Schneideri* n. sp., *fulv. Schneideri* det. Ganglbauer, Typus (NHMW). – Poland: 12 ex. (NHMW). – Rumania: 2 ex. (NHMW). – Spain: 1 ex. (Cuppen). – Sweden: 11 (NHMW, ZMAN, RMNH, BMNH). – USA: 1 ex., Larive Lake, South Dakota, 22.vi.1940 (CNCI). – USSR: 1 ex. (BMNH). – Yugoslavia: 3 ex. (CNCI, OLML). – Locality not traced or unknown: 118 ex. (NHMW, BMNH, MZLU, RMNH, OLML), 1 ex., (♀ lectotype of *interpunctatus*), (BMNH); 1 ex. (lectotype of *lapponum*) (MZLU).

14. *Haliplus gafnyi* sp. n.
(figs. 132-140)

Type material: Holotype ♂, Israel, Nesher quarry, 27.i.1989, R. Ortal, IES 5344 (HUJI). Paratypes: 1 ♂, Israel, Berekhat, Nesher quarry, 26.xii.1989, R. Ortal, IES 5502 (Angus); 1 ♂, Cyprus, Zakaki Marshes, ii.1948, G. Mavromoustaki (Angus); 1 ♂, Syria, Damascus (MNHN).

Diagnosis

This species resembles *abbreviatus* and *villiersi* in a number of characters, but can be distinguished from them by the flat, strongly and densely punctured metasternal process.

Description

Length 2.9-3.1 mm, width 1.5-1.7 mm. Body oblong oval, widest in the middle (fig. 132).

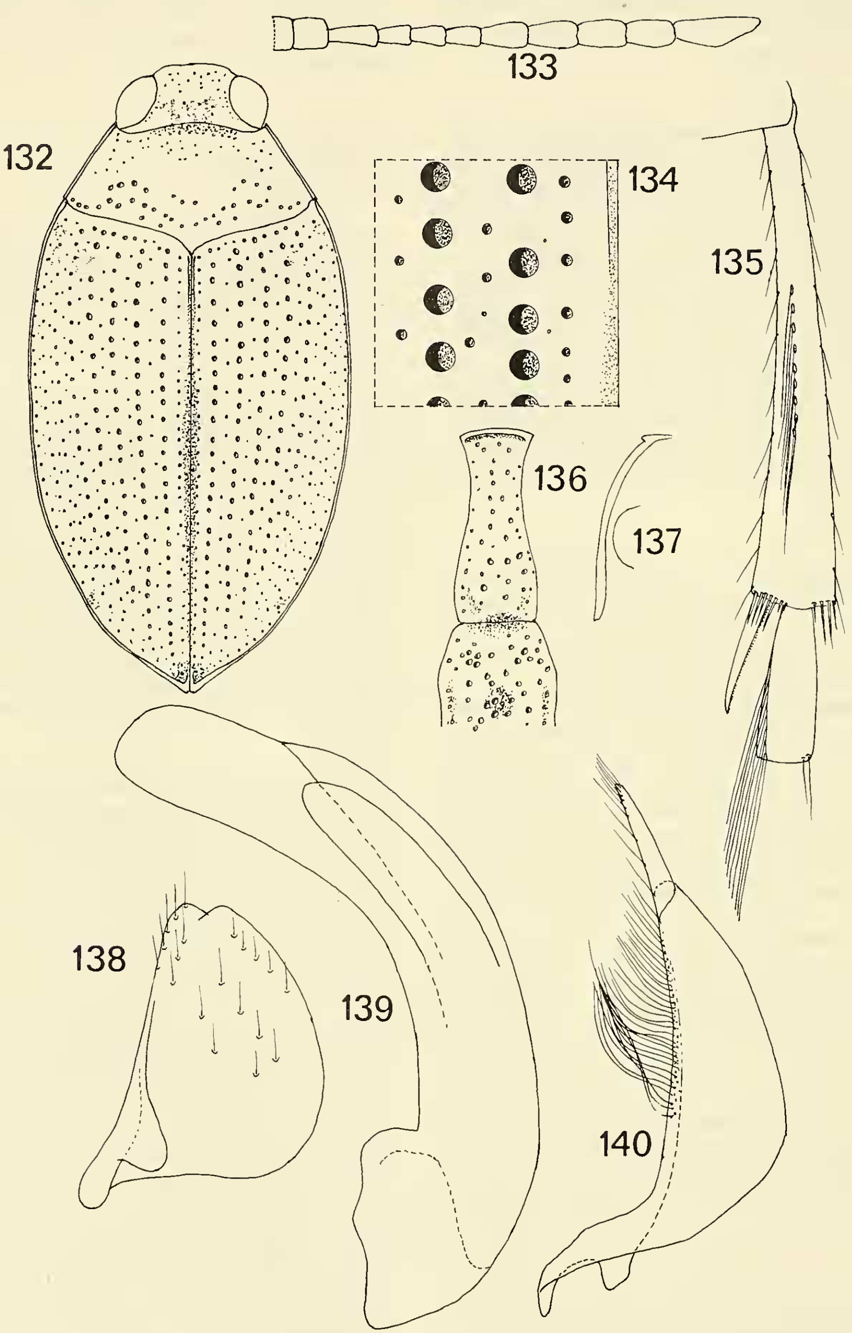
Head. – Yellow-brown, vertex brown, moderate strongly punctured, on the vertex strong darkened punctures. Distance between the eyes 1.4-1.6 × eye-width. Antennae (fig. 133) and palpi yellow to yellow-brown.

Pronotum. – Yellow to yellow-brown, anterior margin darkened in the middle. Lateral borders straight, finely bordered. Moderate strongly punctured, along the base with a partly double row of strong punctures, discal punctures brown, basal punctures black.

Elytra. – Yellow, darkened suture narrow, at most reaching the secondary punctures on the disc, vague brown blotches on the shoulders and in the apical part (fig. 132). Primary punctures strong, 28 punctures in the first row. Secondary punctures strong. All punctures darkened (fig. 134).

Ventral side. – Yellow to yellow-brown, elytral epipleura yellow, legs yellow-brown, some darkening towards the coxae. Prosternal process flat, moderate strongly punctured, narrowed near the coxae (fig. 136), lateral plicae complete (fig. 137). Metasternal process flat with a small pit in the middle, strongly and densely punctured (fig.136). Setiferous striole ⅓ × the tibia length, with about 10 punctures, longer of the two tibial spurs ⅔ × the length of the first tarsal segment (fig. 135).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 138-140.



Figs. 132-140. *Haliplus gafnyi*, holotype. – 132, dorsal view; 133, antenna; 134, elytral punctuation; 135, dorsal side of hind tibia; 136, prosternal process; 137, lateral view of prosternal process; 138, left paramere; 139, penis; 140, right paramere.

Etymology. – Named after the late Mr. Gabriel Gafny, Hydrologist of the Nature Reserve Authority of Israel.

Biology

In temporary pool.

Distribution (fig. 303)

Only known from Israel.

15. *Haliplus guttatus* Aubé
(figs. 141-149)

Haliplus guttatus Aubé, 1836: 27. Lectotype ♂ (here designated), unlabelled (MNHN, coll. S.E.F. Aubé) [examined].

Haliplus pelopis Sahlberg, 1907: 21. Lectotype ♂ (here designated), Elis, J. Sahlb., Spec. typ., 2284, Mus. Zool. H.fors, Spec. typ. No. 852, *Haliplus pelopis* J. Sb. [aedeagus missing] (UZMH) [examined]. Syn. n.

Haliplus guttatus; Aubé 1838: 15, Müller 1900: 113, Apfelbeck 1904: 359, Fiori 1904: 195, Escalera 1914: 57, Zimmermann 1920: 308, 1924: 135, Guignot 1928: 145, 1933: 232, 1947: 52, 1959: 36, Scholz 1929: 15, F. Burmeister 1939: 213, E. Burmeister 1987: 177, Csiki 1946: 560, Zaitsev 1953: 72, Lagar Mascaro 1968: 73, Ienistea 1978: 294, Franciscolo 1979: 122.

Haliplus pelopis; Zimmermann 1920: 314, 1924: 135, Burmeister 1939: 214, Zaitsev 1953: 72, Ienistea 1978: 294.

Diagnosis

Very variable in shape, from oval to strongly parallel, maculation not always clearly visible.

Description.

Length 3.6-4.1 mm, width 1.7-2.1 mm. Body parallel to subparallel (fig. 141).

Head. – Yellow-red to rust-coloured, dark blotch on vertex, weakly, behind the eyes more strongly punctured. Distance between the eyes 1.7-1.9 × eye-width. Antennae (fig. 142) and palpi yellow-red.

Pronotum. – Yellow to rust-coloured. Lateral borders convex to nearly straight, sometimes slightly concave before the basal corners, finely bordered. Weakly and sparsely, in the basal part densely punctured, basal row of darkened punctures twice as wide as the elytral punctures.

Elytra. – Yellow with a variable pattern of vague, sometimes hardly visible blotches, in most cases a large blotch on the suture (fig. 141). Fine primary punctures basally stronger, about 37 punctures in the first row. Secondary punctures weak. All punctures darkened (fig. 143).

Ventral side. – Body yellow to yellow-red, elytral epipleura yellow, legs yellow-red, some darkening towards the coxae. Prosternal process flat, slightly narrowed near the coxae (fig. 145), lateral plicae complete (fig. 146), coarsely and densely punctured. Metasternal process flat with a shallow pit in the middle, weakly and sparsely punctured (fig. 145). Setiferous striole on dorsal face of hind tibia about ⅓ × the tibia length with 5-10 punctures, longer of the two tibial spurs ⅔ to ¾ × the length of the first tarsal segment (fig. 144). Length of hind tarsus including claws 1.3-1.4 × the tibia length, first tarsal segment about 1.3 × the length of the second segment.

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 147-149.

Biology

In stagnant water, fresh or brackish, even in brooks.

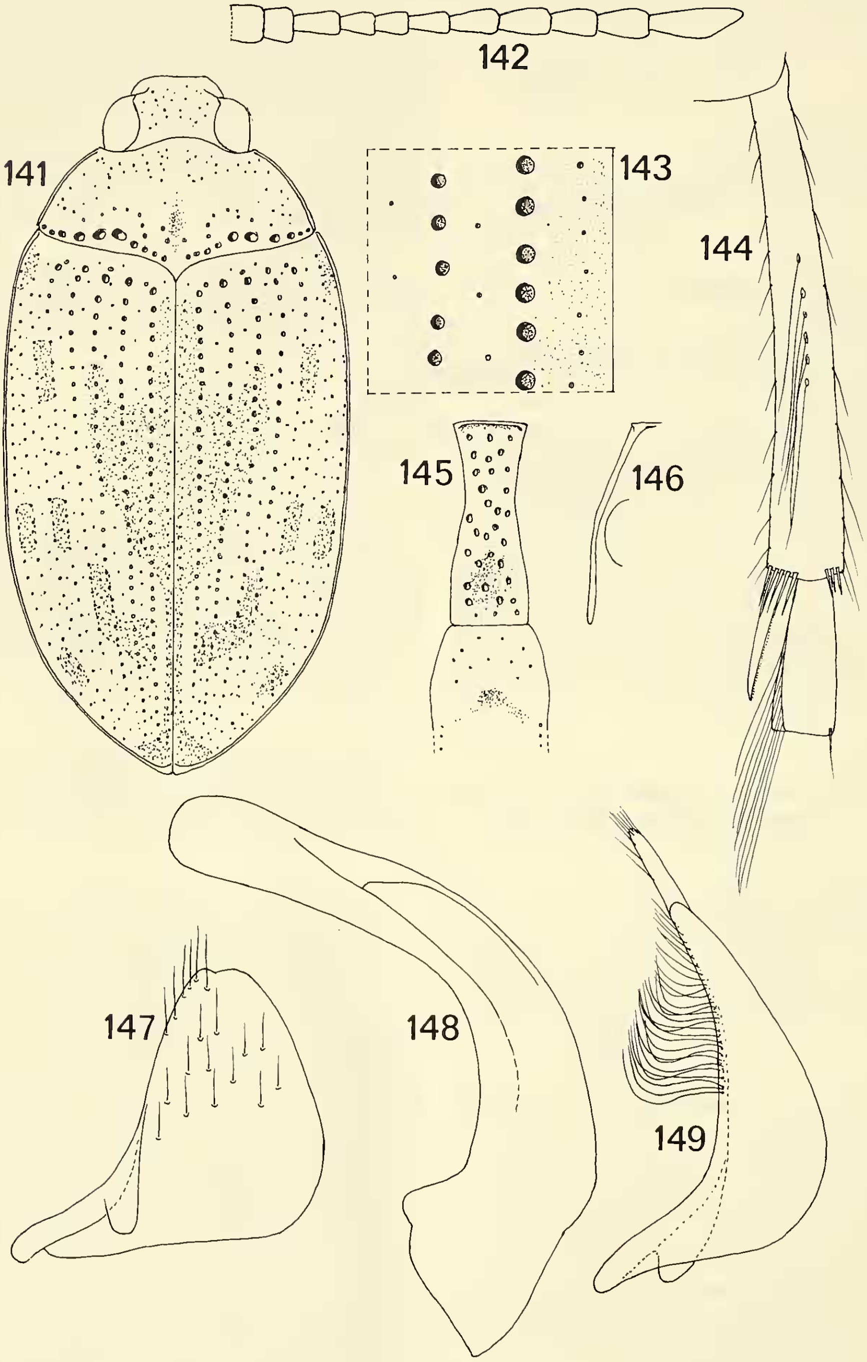
Distribution (fig. 297)

Mediterranean, south and south-west of France, Corsica, Spain including Baleares, Italy including Sardinia and Sicily, Malta, Yugoslavia, Greece, North Africa: Morocco, Algeria, Tunisia. All records from Poland and the southern states of the USSR are suspect and likely concern other species such as *fulvus*, *variegatus* or *maculatus*.

Remarks

The types of *guttatus* and *pelopis* have been examined. They do not show all differences used in earlier identification-keys. I regard both conspecific.

Material examined. – 67 ex. – Algeria: 5 ex.; 2 ex., Algiers, v.1861, H. Clark; 3 ex., Kraatz; 3 ex., lac des Serpents, Djijellé, Massif des Mouzaia (BMNH); 1 ex., Philippeville (MNHN); 2 ♀, Taguin; 4 ex., Prov. d'Alger, Taguin, 1895, de Vauloger (NHMW). – France: 1 ex., Nizza, (NHMW); 1 ex., Montpellier, v.1861, H. Clark (BMNH); 1 ex., Camargue, nr. Salin de Giraud, 12.vi.1980 (Huijbregts); 1 ex., Albaron (B. du R.), L. Schaefer (RMNH); 1 ex., Albaron (B. du R.); 1 ex., Pyrenées; 1 ex., Montfort, Landes (ZMAN); 2 ex., Beragne (MNHN); 1 ex., Les Angles, Gard. iv.1928; 1 ex., Camargue; 1 ex., Corsica, 1905, Aleria; 4 ex., Hyères (BMNH). – Greece: 1 ♂ (Lectotype of *pelopis*) (UZMH); 1 ex. (MNHN); 2 ex., Acarnan, 8.ii.1969, Forster (OLML); 1 ex., Attika (ZMAN); 4 ex., Zante, Kalamaki, 1909, M. Hilf; 1 ex., Khalkidhiki, Sithonia, 22.vii.1988, M.Jäch; 1 ex., Kérkira, Stephanides (NHMW). – Italy: 1 ex., Sardinia, Assuni, Krausse (NHMW); 1 ♂, Sardegna, Gag., 7 km W. of Carbonia, alt. 20 m., 6.v.1984 (Huijbregts); 1 ex., Lucania, Policorof M.T., 3.xi.1972, Angelini; 1 ex., Toscane, Dahl (RMNH); 1 ♂, Florenz, Brozzi (OLML); 1 ex., Etruria, (BMNH). – Malta: 1 ex., Chadwick Lakes, 31.i.1987, M. Borg, fresh water (NHMW). – Spain: 2 ex., Palencia (MNHN, ZMAN). – Yugoslavia: 1 ♂, Zadar (Zara), Sturany, 1891 (NHMW). – Locality not traced: 1 ex., S. Sparato, Dodero (MNHN)



Figs. 141-149. *Haliplus guttatus*, Zante, Greece. – 141, dorsal view; 142, antenna; 143, elytral punctuation; 144, dorsal side of hind tibia; 145, prosternal process; 146, lateral view of prosternal process; 147, left paramere; 148, penis; 149, right paramere.

– Without locality: 1 ♂, Lectotype of *guttatus*; 1 ♀, 2 ♂, Paralectotypes of *guttatus* (MNHN); 2 ex., 67-56 (BMNH); 1 ex., Ullr.; 2 ex., Dhl., aa 44 (NHMW)

16. *Haliplus holmeni* sp. n.
(figs. 150-160)

Type material: Holotype ♂, [China] 'Yunnan, Museum Paris, coll. Maurice Régimbart, 1908' (MNHN).

Diagnosis

Looks related to *sharpi,* but the male has a left paramere with a solid digitus. The fore tarsi have a cushion between the claws.

Description

Length 3.3 mm, width 1.7 mm. Body oval, widest in the middle (fig. 150).

Head. – Brown with yellow labrum, dark blotch on vertex, moderately strongly punctured, unpunctured band between the hind parts of the eyes. Distance between the eyes 1.2 × eye-width. Antennae yellow, base of eighth till eleventh segment slightly darkened, top of ultimate segment pale (fig. 151), palpi yellow.

Pronotum. – Yellow-brown to brown anteriorly, lateral borders somewhat irregularly convex, brown and clearly bordered. Width at the base 2.0 × the length in the middle and 1.9 × the width in front. Sparsely, anteriorly densely, basally strongly punctured. Basal punctures black and partly widened. Slightly impressed along the central part of the base (fig. 150).

Elytra. – Yellow-brown with extensive black markings: wide band along the base till the fifth puncture-row, suture, arrow-shaped central blotch and blotches on the apical half, the apex and three large blotches on the fifth to ninth interval. Primary puncture-rows strong, about 24 punctures in the first row, third to fifth row close to each other in the central part. Secondary punctures moderately strong (fig. 152). Primary and secondary punctures tending to form transverse impressions in the basal part. All punctures darkened.

Ventral side. – Rust-coloured to brown, elytral epipleura yellow-brown, legs yellow-red, darkened towards the coxae. Prosternal process slightly impressed, stronger impressed apically, densely punctured, slightly narrowed near the coxae (fig. 155), lateral plicae complete (fig. 156). Metasternal process flat, impressed apically and a shallow pit in the middle, sparsely punctured (fig. 155). Coxal plates rather strongly punctured, along the suture weakly punctured, short hairs in the punctures, only few small punctures between the normal ones (fig. 157). Hind margins of the fifth and sixth abdominal sternite with complete puncture-rows (fig. 157). Setiferous striole consisting of about 6 separate punctures, longer of the two tibial spurs about ⅔ the length of the first tarsal segment (fig. 154).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Between the fore-claws a small cushion (fig. 153). Penis and parameres as in figs. 158-160, left paramere with a parallel solid digitus.

Etymology. – This species is named after my colleague specialist of Haliplidae, Mogens Holmen.

Distribution (fig. 312)

Only known from south-west China (Yunnan)

17. *Haliplus jaechi* sp. n.
(fig. 161-169)

Type material: Holotype ♂, [Turkey], 'TR, Bismil ö, Diyarbakir, 29.v.1987 (35), Jäch' (NHMW).

Diagnosis

This species is related to *kulleri* and *ortali.* The left paramere has a strongly developed solid digitus and on the inner margin a well developed row of setae.

Description:

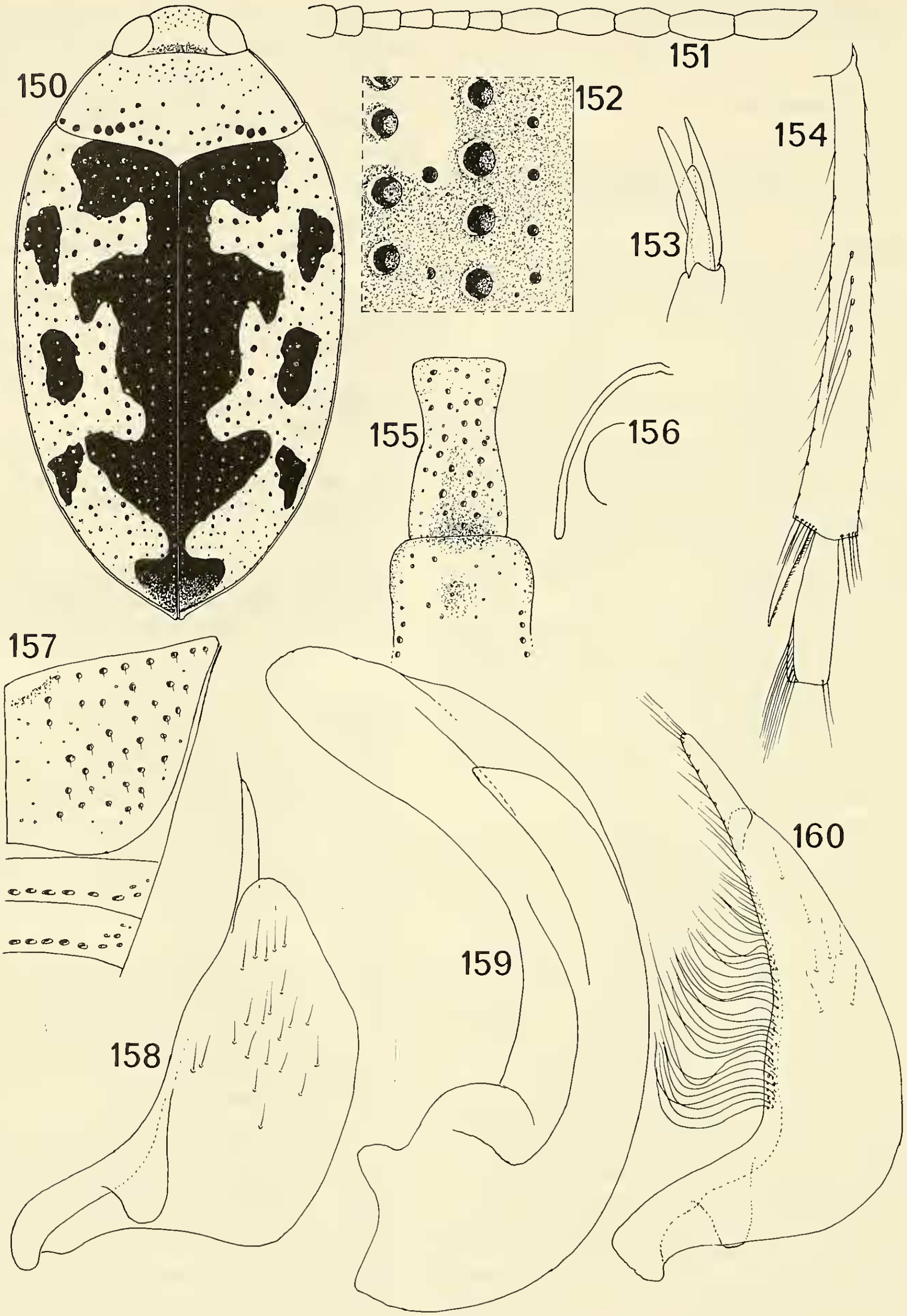
Length 3.3 mm, width 1.6 mm. Body oblong oval, widest in the middle (fig. 161).

Head. – Brown, puncturation moderately strong and dense, unpunctured band between the hind parts of the eyes. Distance between the eyes 1.4 × eye-width. Antennae yellow-brown, second to fourth segment yellow, third segment 1.5 × the length of the fourth segment (fig. 162). Palpi yellow-brown.

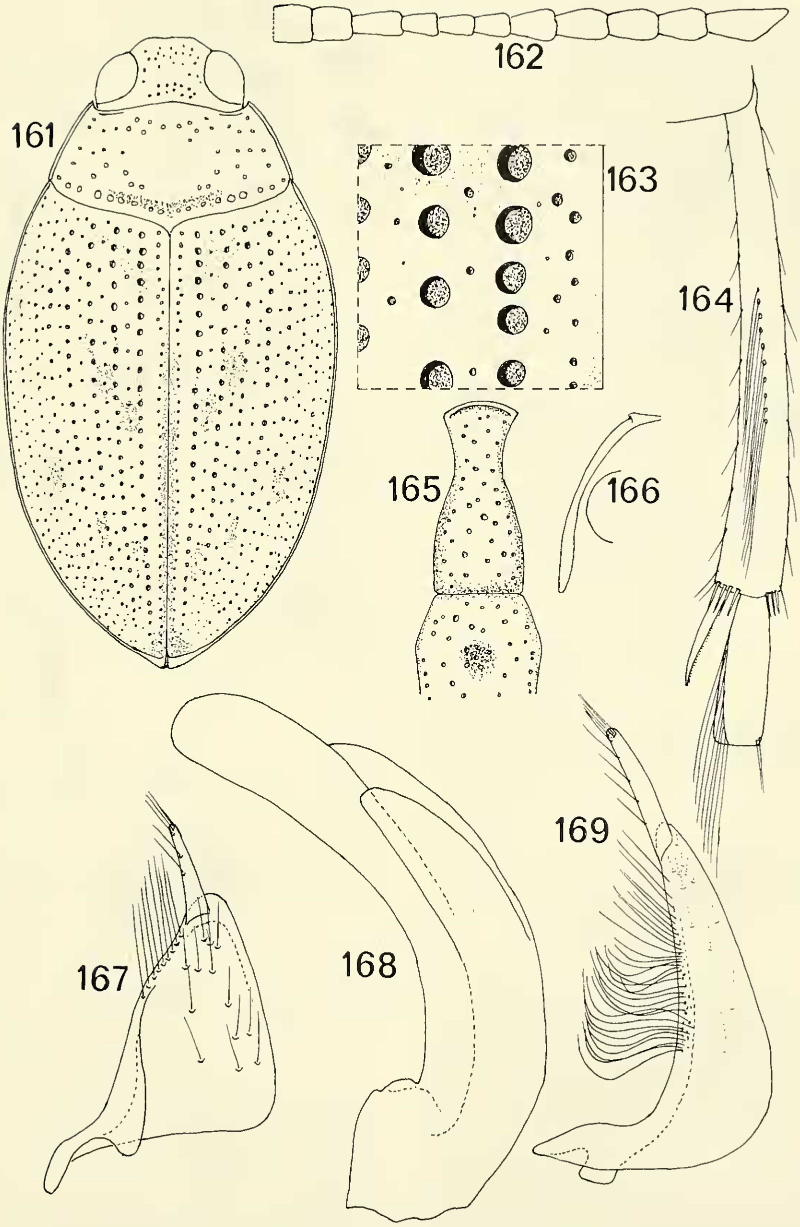
Pronotum. – Yellow-brown. Lateral borders slightly convex, darkened and clearly bordered. Width at the base 1.8 × the length in the middle and 1.5 × the width in front. Sparsely punctured, on the disc almost unpunctured, along the base some slightly darkened larger punctures. Along the base weakly impressed (fig. 161).

Elytra. – Yellow to yellow-brown, darkened suture and apex, vague blotches on the even intervals. Near the base a transverse slightly darkened band. Primary puncture-rows moderately strong, 28 punctures in the first row. Secondary punctures moderately strong, accompanied by very small punctures (fig. 163), all punctures darkened.

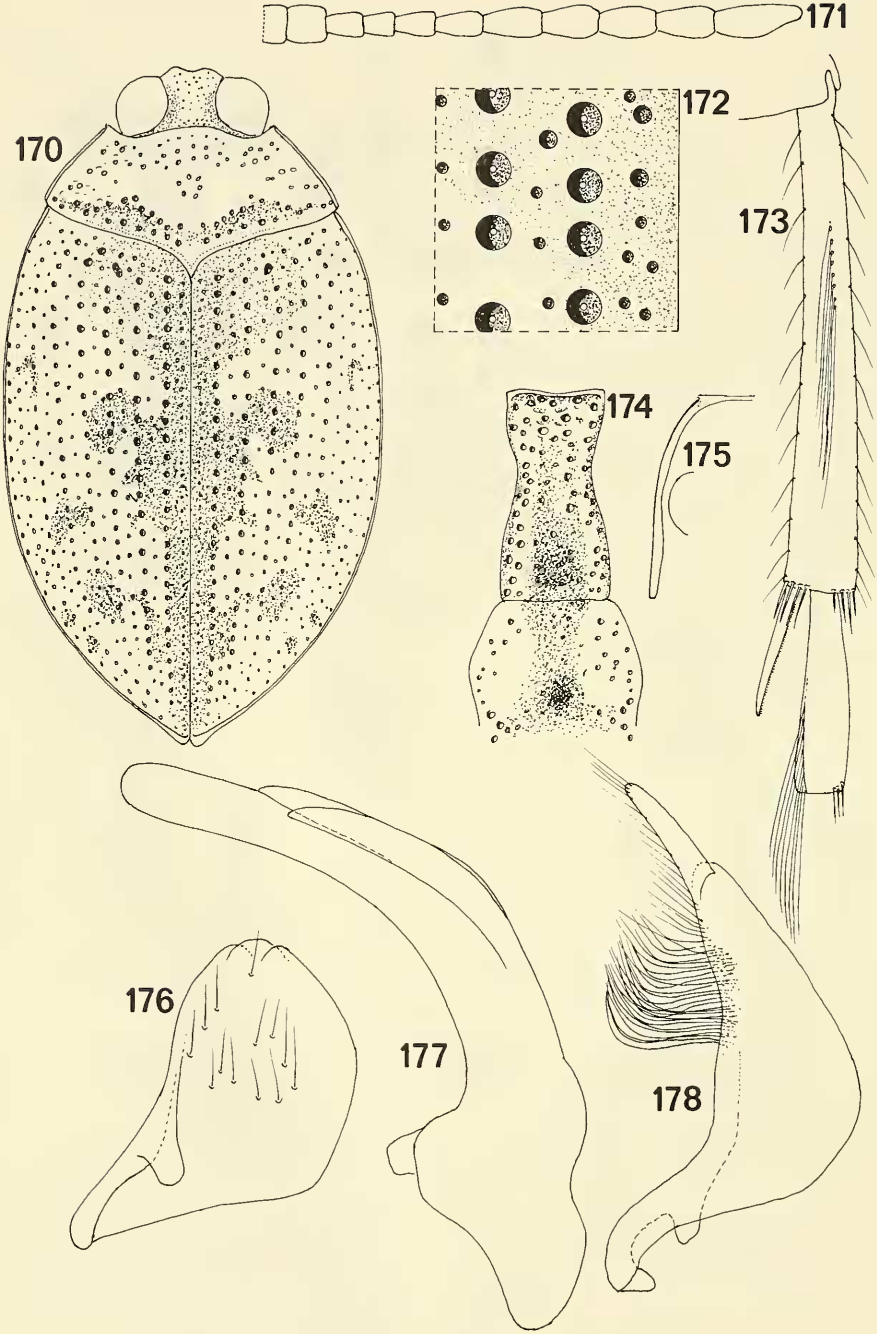
Ventral side. – Yellow to yellow-brown, elytral epipleura yellow, legs yellow-brown, darkened towards the coxae. Prosternal process slightly convex, strongly narrowed near the coxae, rather weakly punctured (fig. 165), lateral plicae complete



Figs. 150-160. *Haliplus holmeni*, holotype. – 150, dorsal view; 151, antenna; 152, elytral punctuation; 153, fore claws; 154, dorsal side of hind tibia; 155, prosternal process; 156, lateral view of prosternal process; 157, hind coxal plate; 158, left paramere; 159, penis; 160, right paramere.



Figs. 161-169. *Haliplus jaechi*, holotype. – 161, dorsal view; 162, antenna; 163, elytral punctuation; 164, dorsal side of hind tibia; 165, prosternal process; 166, lateral view of prosternal process; 167, left paramere; 168, penis; 169, right paramere.



Figs. 170-178. *Haliplus kotoshonis*, Okinawa. – 170, dorsal view; 171, antenna; 172, elytral punctuation; 173, dorsal side of hind tibia; 174, prosternal process; 175, lateral view of prosternal process; 176, left paramere; 177, penis; 178, right paramere.

(fig. 166). Metasternal process flat with a shallow impression in the middle, sparsely punctured (fig. 165). Coxal plates sparsely punctured. Setiferous striole on dorsal side of hind tibia about ¼ of the tibia length, with about 7 punctures, longer of the two tibial spurs ⅔ the length of the first tarsal segment (fig. 164).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 167-169, left paramere with a solid digitus and a well developed row of long bristles on the inner margin.

Etymology. – Named after the collector Dr. Manfred Jäch.

Distribution (fig. 302)

Only known from south-east Turkey, Bismil.

18. *Haliplus kotoshonis* Kano & Kamiya
(figs. 170-178)

Haliplus kotoshonis Kano & Kamiya, 1931: 2. Types burned during World War II (Nakane pers. comm.).
Haliplus kotoshonis; Sato 1984: 2, Nakane 1985a: 64, 1987: 30.

Diagnosis

This species resembles *pulchellus* and *maculipennis* by having the eyes close to each other, but it can be distinguished by the simply impressed prosternal process and the lack of a basal black elytral band.

Description

Length 3.5-3.6 mm, width 1.9-2.0 mm. Body oval, middle part subparallel, widest in the middle (fig. 170).

Head. – Brown, along the eyes dark brown. Puncturation strong and dense. Clypeus impressed in the middle. Distance between the eyes 0.8-1.0 × eye-width. Antennae (fig. 171) and palpi brown-red.

Pronotum. – Brown-red. Lateral borders slightly convex, finely bordered. Hind corners protruding and strongly rounded. Punctures very strong, except on the disc dense and along the base often coarse. Base strongly impressed.

Elytra. – Yellow-brown, dark brown maculation on sutural interval and on the apex, a central blotch on the disc and small sometimes connected blotches on the other intervals. Suture slightly bordered in the basal part and at the apex. All primary punctures strong to very strong, basal punctures coarse, 32-34 punctures in the first row. Secondary punctures strong and dense. All punctures darkened and with a small yellow centre (fig. 172).

Ventral side. – Body brown, elytral epipleura yellow-brown, legs yellow-brown to brown, slightly darkened near the coxae. Prosternal process clearly impressed in the middle, narrowed near the front coxae (fig. 174), lateral plicae complete (fig. 175), strongly and partially coarsely punctured. Metasternal process impressed and with a pit in the middle, strongly punctured (fig. 174). Setiferous striole on dorsal face of hind tibia about ⅕ × the tibia length, containing about 8 punctures, longer of the two tibial spurs about ⅔ × the length of the first tarsal segment (fig. 173).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 176-178.

Distribution (fig. 310)

Taiwan (type-locality: isle of Kotosho), Japan (Okinawa).

Remarks

Although this species seems to belong to the oriental fauna, it is treated here for practical reasons.

Material examined. – Japan: 1 ♂, 1 ♀, Kimibaru, Ohgimi V., Okinawa-Hontô, 18.viii.1989, leg. E. Matsui (in authors coll.).

19. *Haliplus kulleri* Vondel
(figs. 179-187)

Haliplus kulleri Vondel, 1988: 97. Holotype ♂, Israel, 25.3.81, Lower Galilee, Parod Res., N. Ammud Basin, 35 km W. of Akko, IES 2350, Col. 1673 (NHMW) [examined].

Diagnosis

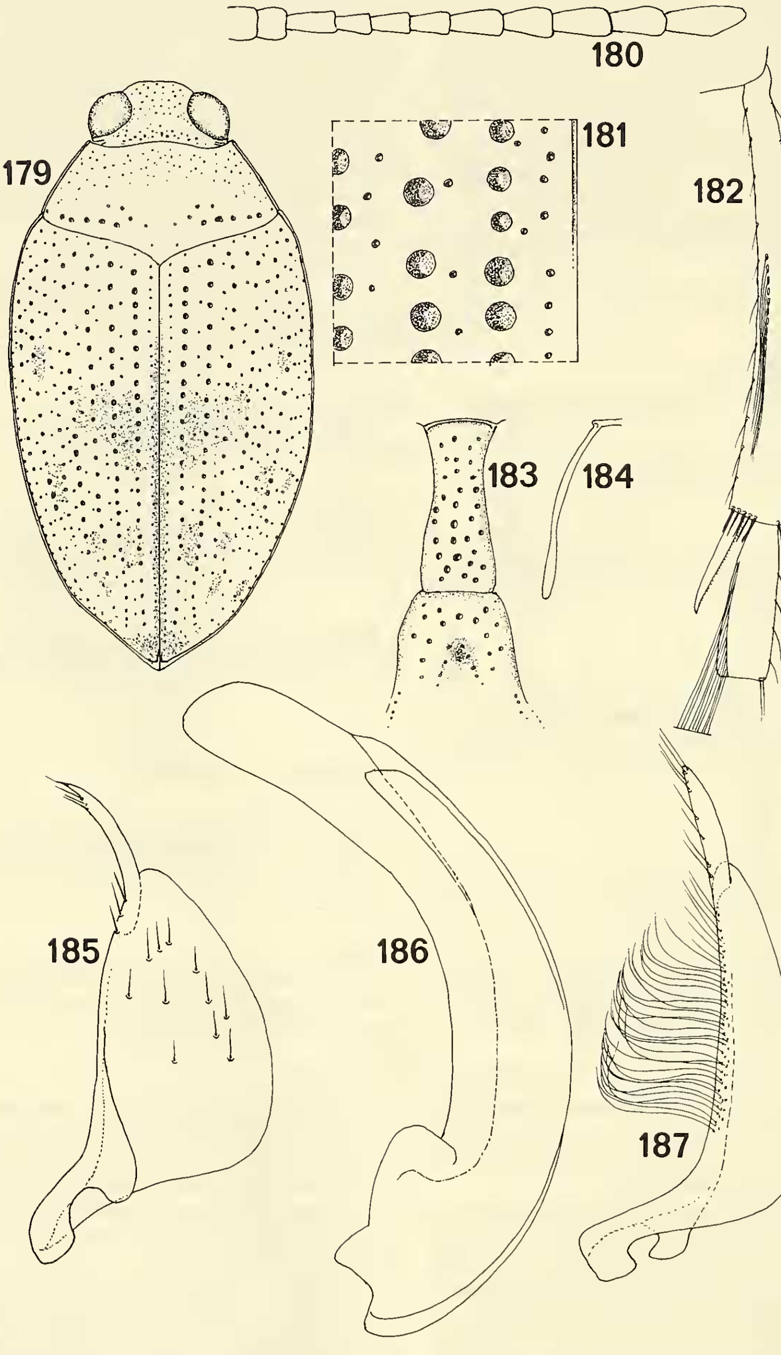
Closely related to *jaechi* and *ortali*, but in the males characterised by the long parallel-sided solid digitus on the left paramere.

Description

Length 2.9-3.0 mm, width 1.6 mm. Body fairly narrow, subparallel, widest in the middle (fig. 179).

Head. – Brown, puncturation behind the eyes rather dense, anteriorly more sparse, leaving an unpunctured shiny area between the eyes. Distance between the eyes 1.4-1.5 × eye-width. Antennae (fig. 180) and palpi yellow.

Pronotum. – Yellow, slightly darkened on the disc. Lateral borders nearly straight, finely bordered. Sparsely and weakly punctured, leaving an unpunctured shiny area on the disc, two short basal rows of slightly widened and darkened punctures (fig. 179).



Figs. 179-187. *Haliplus kulleri*, holotype. – 179, dorsal view; 180, antenna; 181, elytral punctuation; 182, dorsal side of hind tibia; 183, prosternal process; 184, lateral view of prosternal process; 185, left paramere; 186, penis; 187, right paramere.

Elytra. – Yellow with a pattern of brown blotches, one triangular on the middle of the suture and some smaller ones around. Moderately strong darkened primary puncture-rows, about 30 punctures in the first row. Secondary punctures small, alternated with very fine punctures (fig. 181).

Ventral side. – Body yellow-brown, elytral epipleura yellow, legs yellow. Prosternal process slightly convex, narrowed near the coxae, covered with strong punctures (fig. 183), lateral plicae continuous (fig. 184). Metasternal process flat with a shallow pit in the middle, sparsely punctured (fig. 183). Legs half shiny, with fine micro-punctuation. Setiferous striole on dorsal face of hind tibia with about 9 punctures, longer of the two tibial spurs about ⅔ × the length of the first tarsal segment (fig. 182). Length of hind tarsus including claws 1.3 × the tibia length, first tarsal segment 1.5 × the length of the second segment.

Male sexual characters. – First three tarsal segments of fore- and midlegs hardly widened, scaly hairs on ventral side. Penis and parameres as in figs. 185-187, left paramere with a long parallel digitus (fig. 185).

Female: Unknown.

Biology

In temporary pool.

Distribution (fig. 302)

Only known from Israel, Lower Galilee.

Material examined: 2 ex. – Israel: 1 ♂ (holotype); 1 ♂, Berekhat Shosh, 23.i.1989, IES 5343 (HUJI).

20. ***Haliplus laminatus*** **(Schaller)**

(figs. 188-198)

Dytiscus laminatus Schaller, 1783: 314. Types not located, Schaller's material has been lost (Horn & Kahle 1936) [not examined].

Haliplus cinereus Aubé, 1836: 30. Lectotype (here designated), Gallia, 2645, coll. Chevrolat, Det. Sharp. 82, *Haliplus cinereus* Aubé p18, *affinis* Steph., Type, *cinereus* Aubé, Type d'Aubé, TYPE (pink label) (ISNB) [examined].

Haliplus laminatus ?var. *ater* Redtenbacher, 1842: 8. Types not located [not examined].

Haliplus laminatus ♀ var. *punctulatus* Penecke, 1901: 11. Types not located [not examined].

Haliplus lombardus Fiori, 1904: 198. Types not located [not examined].

Haliplus laminatus; Seidlitz 1887: 31, Apfelbeck 1904: 361, Fiori 1904: 197, Zimmermann 1920: 310, 1924: 131, Guignot 1928: 142, 1933: 229, 1947: 48, Kinel 1929: 218, Scholz 1929: 15, Balfour-Browne 1938: 12, 1940: 154, 1951: 5, 1953: 5, Burmeister 1939: 213, Horion 1941: 365, Csiki 1946: 559, Zaitsev 1953: 67, Gueorguiev 1958: 44, 1960: 23, Lindroth 1960: 42, Lagar Mascaro 1968: 71, Freude 1971: 15, Seeger 1971a: 430, 1971b: 558, 1971c: 166, Ienistea 1974: 207, 1978: 294, Ali 1976: 92, Galewski 1976: 30, Mateleshko 1977: 68, Franciscolo 1979: 113, Fichtner 1981:327, Holmen 1981: 2, 1987: 110, Leblanc 1984: 8, Lundberg 1986: 11, Vondel 1986: 128, 1989a: 57.

Haliplus cinereus; Aubé 1836: 30, 1838: 18, Erichson 1837: 185, Zimmermann 1920: 310, Balfour-Browne 1936: 75, 1938: 12, Burmeister 1939: 213.

Haliplus laminatus ?var. *ater*; Zimmermann 1920: 310.

Haliplus ♀ var. *punctulatus*; Zimmermann 1920: 310.

Haliplus lombardus; Zimmermann 1920: 312, Burmeister 1939: 213.

Diagnosis

This species can be distinguished from all other palaearctic species of *Liaphlus* by the dark lines on the elytral puncture-rows and in the males by the strongly dilated first mesotarsal segment and the lack of a digitus on the right paramere.

Description

Length 2.5-3.6 mm, width 1.5-1.9 mm. Body with subparallel sides in the central part (fig. 188).

Head. – Yellow-brown with brown collar, with dense and on the collar strong and darkened punctures. Distance between the eyes 2.0-2.1 × eyewidth. Antennae (fig. 189) and palpi yellow.

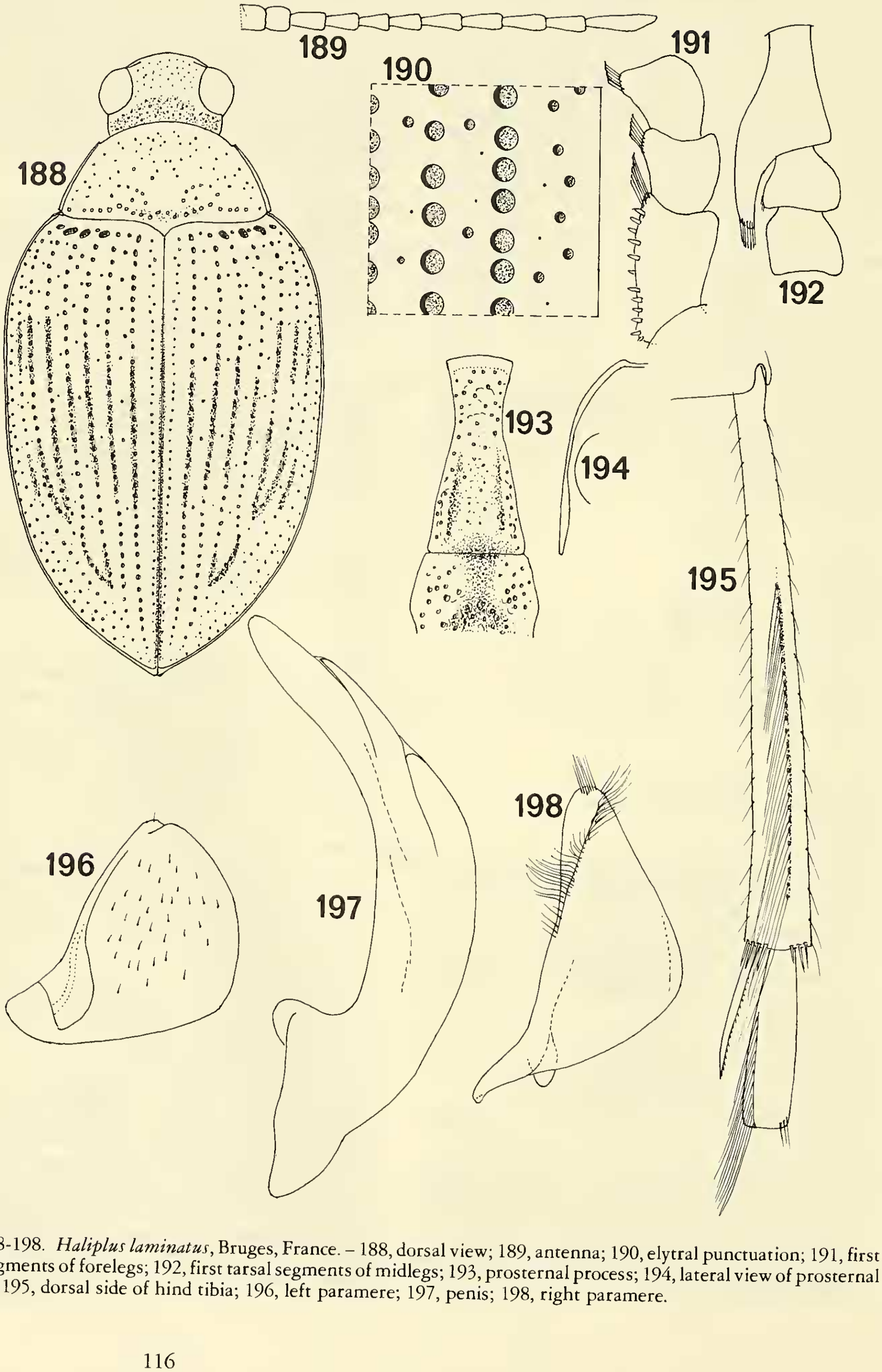
Pronotum. – Yellow. Basally not as wide as base of elytra. Lateral borders slightly convex, finely bordered. Densely, on the disc more sparsely punctured.

Elytra. – Yellow to yellow-red, strong primary puncture-rows with widened and usually groovelike basal punctures, about 42-46 punctures in the first row. Secondary punctures rather weak. All punctures darkened (fig. 190). Primary rows and suture partly, sometimes completely covered with dark lines, not connected to each other (fig. 188).

Ventral side. – Yellow to yellow-brown, elytral epipleura yellow, legs yellow to yellow-brown, coxae red-brown. Prosternal process grooved, narrowed near the coxae, widened towards the apex, punctures moderately strong and dense (fig. 193), lateral plicae complete (fig. 194). Metasternal process slightly impressed in the middle, moderately strongly punctured (fig. 193). Setiferous striole on dorsal side of hind tibia stretched over the apical ⅔, longer of the two tibial spurs ⅔ × the length of the first tarsal segment (fig. 195).

Male sexual characters. – First three protarsal segments slightly widened, scaly hairs on ventral side, first segment ventrally with a complete row of strong spines (fig. 191). First mesotarsal segment strongly delated ventrally (fig. 192). Penis and parameres as in figs. 196-198, right paramere without a digitus as characteristic for *Liaphlus* (fig. 198).

Female. – Elytra with strong micropuncturation.



Figs. 188-198. *Haliplus laminatus*, Bruges, France. – 188, dorsal view; 189, antenna; 190, elytral punctuation; 191, first tarsal segments of forelegs; 192, first tarsal segments of midlegs; 193, prosternal process; 194, lateral view of prosternal process; 195, dorsal side of hind tibia; 196, left paramere; 197, penis; 198, right paramere.

Biology

Usually in slow running water of rivers, canals and brooks, but also found in silt ponds. The adults feed on filamentous algae and invertebrates like larvae of Chironomidae and Oligochaeta (Seeger 1971b) and freshly killed *Asellus aquaticus* (Vondel 1986). The larvae (3rd and 2nd instar) were described by Vondel (1986).

Distribution (fig. 293)

Central Europe from Denmark to the east coast of Spain, central Italy and Albania and from south-east England to the European part of the USSR. The species is also recorded from Iraq (Ali 1976). The records from Ireland (Burmeister 1939, Franciscolo 1979) are doubtful.

Remarks

This species is usually treated as belonging to the subgenus *Liaphlus*, although Kinel (1929) erected a separate subgenus *Hoplites* for this species. The name *Hoplites* is preoccupied (see: International Commission on Zoological Nomenclature 1955: opinion 353), but never replaced. There is reason to believe that this species is more closely related to the subgenus *Haliplus* s. str. (Vondel 1986; Holmen 1987). Before erecting new subgeneric names it seems better to me to await the results of systematic studies on a world basis.

Material examined. – 481 ex. – Albania: 2 ex. (NHMW). – Austria: 81 ex. (ZMAN, CNCI, NHMW, NHMR). – Belgium: 2 ex. (RMNH). – Czechoslovakia: 18 ex. (ZMAN, CNCI, RMNH, MHNG, NHMW, RMNH). – France: 12 ex. (NHMW, RMNH, Jongema, BMNH, Vondel). – Germany: 20 ex. (ZMAN, NHMW, RMNH). – Great Britain: 5 ex. (BMNH). – Hungary: 3 ex. (NHMW). – Italy: 12 ex. (RMNH, NHMW). – Luxembourg: 1 ex. (ZMAN). – Netherlands: 291 ex. (ZMAN, RIN, RMNH, Cuppen, Drost, Giessen, Huijbregts, Jongema, Vallenduuk, Vondel). – Poland: 11 ex. (ZMAN, RMNH, NHMW). – Spain: 2 ex. (NHMW). – Locality not traced or unknown: 22 ex. (BMNH, NHMW, RMNH); 1 ex. (lectotype of *cinereus*) (ISNB).

21. *Haliplus maculatus* Motschulsky
(figs. 199-207)

Haliplus maculatus Motschulsky, 1860: 100. Lectotype ♀ (here designated), [USSR, n.w. of Caspian sea], 'Betscho-Ko' [red label, hardly readable] '*Haliplus maculatus* Motsch., Des K. occ., 1295' [red label] (ZMUM) [examined].

Haliplus syriacus Wehncke, 1880: 73. Lectotype ♀ (here designated) 'Syria, Sharp' (MNHN) [examined]. Syn. n.

Haliplus zimmermanni Gschwendtner, 1921: 56. Lectotype ♂ (here designated) 'Oberösterreich, L. Gschwendtner, Umg. Linz, 5.5.1909, Type, Coll. Gschwendtner, *Haliplus Zimmermanni* Gs, det. Gschwendt, Type' [aedeagus missing] (OLML) [examined]. Syn. n.

Haliplus maculatus; Zimmermann 1920: 317, Kolossov 1931: 116, Zaitsev 1953: 75, Ienistea 1978: 294.

Haliplus syriacus; Zimmermann 1920: 317, 1924: 136, Guignot 1933: 244, Zaitsev 1953: 74, Burmeister 1985: 41.

Haliplus zimmermanni; Zimmermann 1924: 134, Müller 1926: 167, Guignot 1933: 241, Horion 1941: 365, Ienistea 1978: 295, Franciscolo 1979: 120.

Diagnosis

This species closely resembles small specimens of *fulvus*. The male can be distinguished from *fulvus* by the narrow and somewhat pointed top of the penis.

Description

Length 3.4-4.0 mm, width 1.8-2.2 mm. Body oval, widest in the middle (fig. 199).

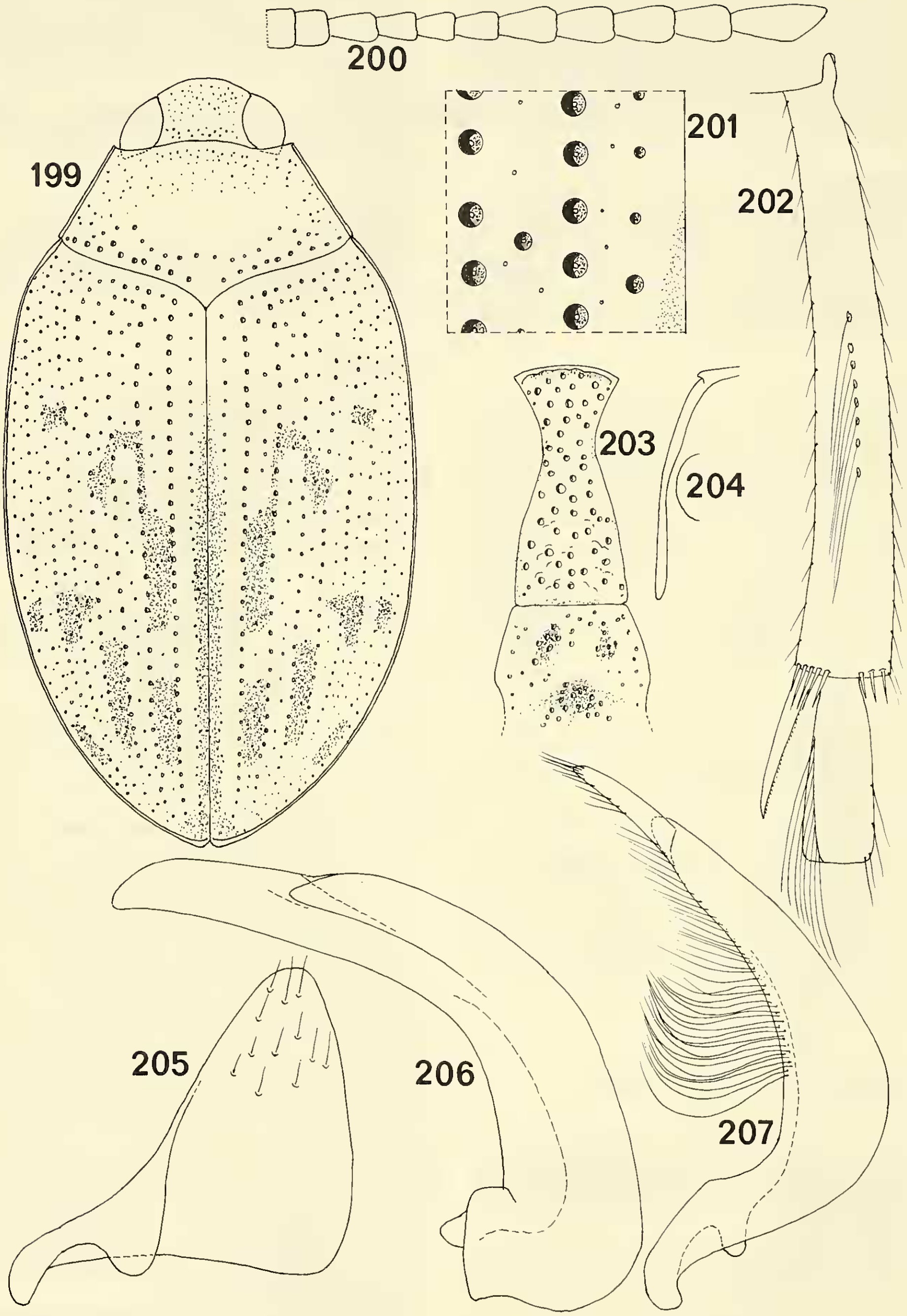
Head. – Yellow-brown to rust-coloured, vertex usually slightly darkened, weakly to moderately punctured, unpunctured band between the eyes. Distance between the eyes 1.4-1.6 × eye-width. Antennae yellow, first segment brown (fig. 200), palpi yellow.

Pronotum. – Yellow to rust-coloured. Lateral borders straight, finely bordered. Sparsely and weakly, along the base strongly punctured, basal punctures usually slightly darkened (fig. 199).

Elytra. – Yellow to rust-coloured, rather weak to moderately strong primary puncture-rows, 28-38 punctures in the first row. Secondary punctures moderately strong, accompanied by very small punctures (fig. 201), usually all punctures darkened. Markings variable, oblong blotches along the suture, on the apex and on the even intervals, the central blotches on the second and fourth interval often connected anteriorly, the markings are often hardly visible or even absent (fig. 199).

Ventral side. – Yellow-brown to rust-coloured, elytral epipleura yellow to yellow-red, legs yellow-red to rust-coloured, darkened towards the coxae. Prosternal process slightly convex, rather sparsely punctured, narrowed near the coxae (fig. 203), lateral plicae complete (fig. 204). Metasternal process flat with a shallow pit in the middle, sparsely punctured (fig. 203). Coxal plates with moderately strong and in between fine punctures, the strong punctures absent on a wide band along the suture. Setiferous striole on dorsal side of hind tibia about ⅓ of the tibia length, with 7-10 punctures, longer of the two tibial spurs about ¾ the length of the first tarsal segment (fig. 202).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 205-207.



Figs. 199-207. *Haliplus maculatus*, Vienna, Austria. – 199, dorsal view; 200, antenna; 201, elytral punctuation; 202, dorsal side of hind tibia; 203, prosternal process; 204, lateral view of prosternal process; 205, left paramere; 206, penis; 207, right paramere.

Biology

In temporary pools, in brooks.

Distribution (fig. 300)

Austria, Hungary, Czechoslovakia, Rumania, Yugoslavia, Italy? (identification uncertain), Poland?, Israel, Syria, Afghanistan, USSR near border with Iran east of the Caspian sea and north of the Black and the Caspian sea. All European specimens I examined are from more than 60 years ago, so the species might be extinct in Europe.

Remarks

The types of *maculatus*, *syriacus* and *zimmermanni* have been compared. Although the first two are females and the important character of the pointed top of the penis cannot be checked, I consider the three conspecific.

Material examined. – 41 ex. – Afghanistan: 1 ♀, W. Afghanistan, Hari Rud, Herat, 20.vii.1949, Danish Central Asian Expedn, St. no. 4, Ex stomach of *Lobivanellus indicus*, *Haliplus fulvus*, J. Balfour-Browne det. 1964 (BMNH). – Austria: 1 ♂ (lectotype *zimmermanni*); 1 ♀, Wien, Prater, Kniz (OLML); 2 ♂, Neusiedler See; 1 ♂, Wien surr., Smolik; 2 ♀, Lavant Tal, Car (RMNH); 1 ♂, Gars, Minarz; 5 ♂, 1 ♀, Wien, Prater; 1 ♂, surr. Wien; 1 ♂, 2 ♀, Steiermarken (Styria), Kars; 1 ♂, Klosterneuburg, Pinker (NHMW). – Czechoslovakia: 1 ♂, Veseli (Moravia, surr. Ostra), Th. v. Wanka (NHMW). – Hungary: 2 ♂, Ujpest (RMNH); 1 ♂, Szekesfehervar (Szfehervar), 1928, (OLML). – Israel: 1 ♂, Berekhat Sasa, 10.viii.1985, Ortal & Jäch (HUJI); 2 ♀, Jerusalem, Sauliy (MNHN). – Italy: 1 ♀, Toscana, Dahl (RMNH). – Rumania: 1 ♂, Bocsa Vasovei (N-Bogsan, Banat) (RMNH). – Syria: 1 ♀ (lectotype) (MNHN). – Yugoslavia: 1 ♀, Fruska Gora (NHMW). – USSR: 1 ♀ (lectotype of *maculatus*) (ZMUM); 1 ♀, Kopet-Dagh, Germab (OLML); 2 ♀, Geok Tepe (Caucase, Guéox-Tapa), L. Mesmin (Angus); 1 ♂, Geok Tepe (Caucase, Gök Tepe), L.Mesmin (OLML). – Locality not traced: 1 ♂, Munganast, Type,1921, coll. Gschwendtner, *Haliplus Zimmermanni* Gschw., det. L. Gschw., Paralectotype [aedeagus missing] (OLML). – Without locality: 2 ♂, (OLML); 1 ♂, Ullr. (NHMW).

22. ***Haliplus maculipennis*** Schaum
(figs. 208-216)

Haliplus maculipennis Schaum, 1864: 107.
Haliplus maculipennis; Régimbart 1877: 354, Sahlberg 1913: 40, Zimmermann 1920: 312, 1924: 138, Guignot 1959: 37, Alfieri 1976: 38.

Diagnosis

This species can be distinguished from other palaearctic species by the distance between the eyes being about equal to eye-width and the row of dark blotches on the elytral marginal parts.

Description

Length 3.0-3.3 mm, width 1.6-1.7 mm. Body wide with subparallel sides (fig. 208).

Head. – Yellow-red with darker vertex, weakly to moderately strongly punctured. Distance between the eyes about eye-width. Antennae (fig. 209) and palpi yellow-red.

Pronotum. – Yellow-red. Lateral borders straight, strongly bordered, posterior corners usually protruding. Strong punctures along base (fig. 208).

Elytra. – Yellow-red, primary puncture-rows weak except in the basal part of the first 3 or 4 rows, basal part of third row usually impressed, about 30 punctures in the first row. Secondary punctures weak (fig. 210). Extensive elytral markings: complete suture, a basal band until the 5th puncture-row, triangular apically hooked central blotch and several smaller blotches, 8th puncture-row with a row of small blotches (fig. 208).

Ventral side. – Body yellow-red, legs yellow-red, darkened towards the coxae. Prosternal process wide, slightly narrowed near the coxae, strongly impressed towards the apex, sparsely but strongly punctured (fig. 212), lateral plicae complete (fig. 213). Metasternal process flat with a pit in the middle, weakly punctured (fig. 212). Setiferous striole about $^{1}/_{6}$ × the tibia length, longer of the two tibial spurs about ¾ × the length of the first tarsal segment (fig. 211).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 214-216.

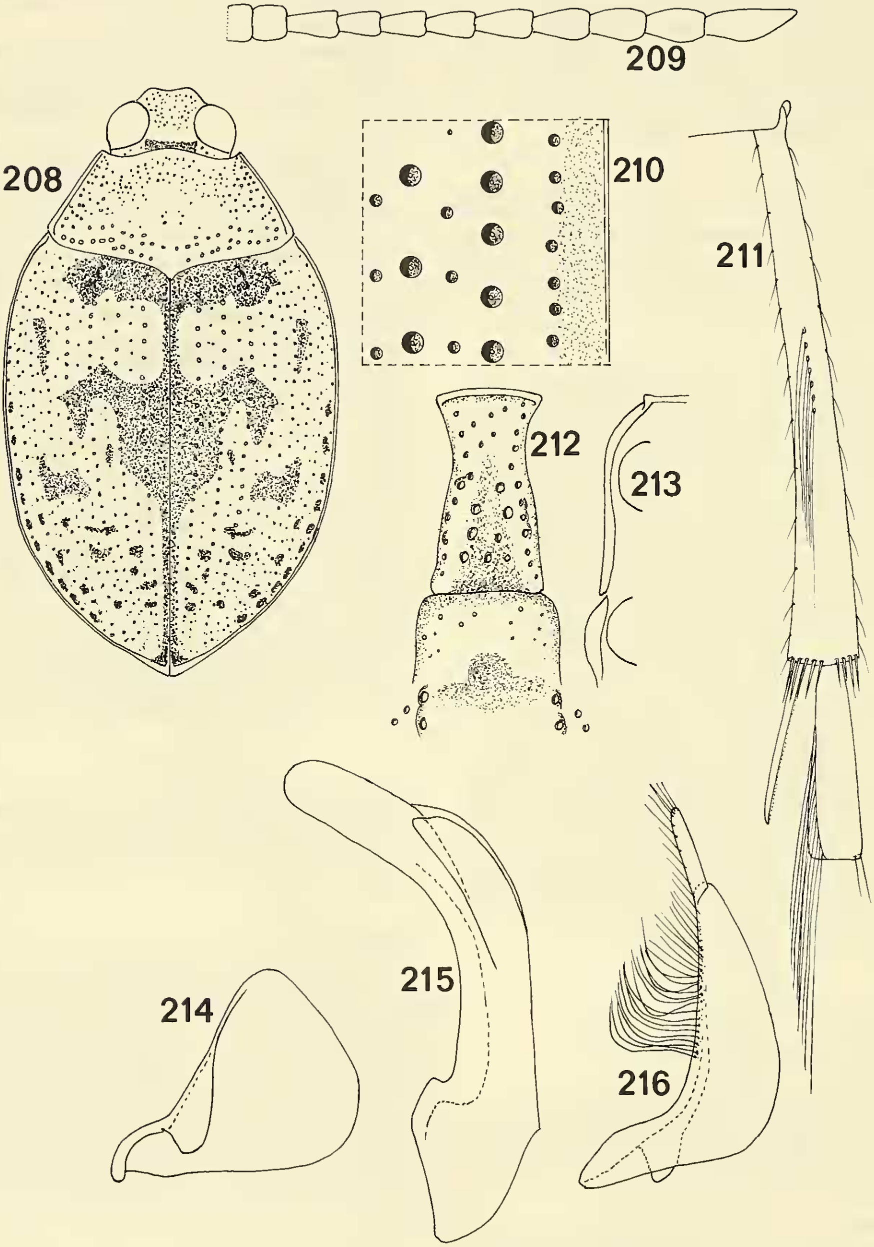
Distribution (fig. 306)

Egypt. The variety *abyssinicus* Régimbart in Egypt, Sudan, Ethiopia, Zaire, Ivory Coast and Bénin. Subspecies *capensis* Gueorguiev in South Africa.

Remarks

In the collection of München (ZSMC) 1 ♀ is present indicated as type: Egypt, Schaum, Typ, Sammlung Cl. Müller, *Haliplus maculipennis* Schaum [examined]. According to Guignot (1959) the type should be in ZMHB. [not examined]. Also because this species originates from the Ethiopian fauna I postponed the designation of a lectotype and the examination of the described varieties or subspecies until a revision of the Ethiopian fauna is undertaken.

Material examined. – 4 ex. – Egypt: 1 ♀, Schaum, Typ (ZSMC); 1 ♂, Cairo, J.Sahlb. (NHMW).- Without locality: 1 ♀, 1 ♂ (ZSMC).



Figs. 208-216. *Haliplus maculipennis* (208, 212-216, locality unknown; 209 -211, Cairo, Egypt). – 208, dorsal view; 209, antenna; 210, elytral punctuation; 211, dorsal side of hind tibia; 212, prosternal process; 213, lateral view of prosternal process; 214, left paramere; 215, penis; 216, right paramere.

23. *Haliplus mucronatus* Stephens
(figs. 217-225)

Haliplus mucronatus Stephens, 1829: 40. Types probably in BMNH [not examined].
Haliplus badius Aubé, 1836: 25. Types probably in MNHN [not examined].
Haliplus parallelus Babington, 1836: 178. Types possibly in CUMZ [not examined].
Haliplus siculus Wehncke, 1883: 145. Types probably in MNHN [not examined].
Haliplus mucronatus; Schaum 1848: 42, Müller 1900: 113, Apfelbeck 1904: 359, Fiori 1904: 193, Escalera 1914: 57, Zimmermann 1920: 312, 1924: 131, Guignot 1928: 143, 1933: 229, 1947: 49, 1959: 33, Scholz 1929: 14, F. Burmeister 1939: 213, Balfour-Browne 1940: 149, 1953: 5, Horion 1941: 365, Bertrand 1949: 25, Zaitsev 1953: 67, Gueorguiev 1958: 44, 1981: 400, Lagar Mascaro 1968: 72, Freude 1971: 15, Franciscolo 1972: 65, 1979: 115, Ali 1976: 92, Ienistea 1978: 294, Fichtner 1981: 327, Leblanc 1984: 40, Vondel 1985: 33, E. Burmeister 1987: 177, Holmen 1987: 115.
Haliplus badius; Aubé 1838: 13, Schaum 1848: 42, Seidlitz 1887: 29, Zimmermann 1920: 312.
Haliplus parallelus; Schaum 1848: 42, Zimmermann 1920: 312.
Haliplus siculus; Seidlitz 1887: 29, Apfelbeck 1904: 359, Scholz 1916: 165, Zimmermann 1920: 312.

Diagnosis

This species can be distinguished from related species by the large distance between the eyes (more than 2.3 × eye-width) and the metasternal process, not being grooved or pitted in the middle.

Description

Length 4.0-4.4 mm, width 1.9-2.2 mm. Body subparallel (fig. 217).

Head. – Yellow-red to brown, punctures moderately strong. Distance between the eyes 2.3-2.8 × eye-width. Antennae (fig. 218) and palpi yellow-red.

Pronotum. – Yellow-red. Lateral borders slightly convex, weakly tapering anteriorly, finely bordered. Densely and fairly strongly punctured, basally with a row of widened punctures, on the disc with an unpunctured transverse band. Punctures usually darkened (fig. 217).

Elytra. – Yellow-red without markings, all primary puncture-rows about equal in strength, 45-50 punctures in the first row. Secondary puncture-rows well developed, number of punctures about the same as in the primary rows. All punctures darkened (fig. 219). Basal punctures of 3rd to 5th row usually groove-like.

Ventral side. – Body yellow to yellow-red, legs yellow to yellow-red. Prosternal process flat to slightly impressed, strongly, apically even coarsely punctured, gradually narrowed towards the coxae (fig. 221), lateral plicae complete (fig.222). Metasternal process slightly convex, sparsely punctured (fig. 221). Setiferous striole on dorsal side of hind tibia long, more than half of the tibia length, longer of the two tibial spurs about two thirds the length of the first tarsal segment (fig. 220).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 223-225.

Biology

In fresh or brackish water, particularly in clay and gravel pits with Characeans. The larva was described by Bertrand (1928, as *guttatus)*.

Distribution (fig. 294)

Central and southern Europe: south and southeast of England, the Netherlands, Belgium, France including Corsica, Spain including Mallorca, the south of Germany, Switzerland, Italy including Sardinia and Sicily, Yugoslavia, Albania, Greece, Turkey, USSR along the Black Sea, Iraq, North Africa along the coast from Morocco till Libya. The record from the Harz mountains in East Germany was confirmed by Fichtner (1981), but he is not sure that the labelling is correct. The records from Leningrad and the Kirghiz steppes are incorrect (Zaitsev 1953).

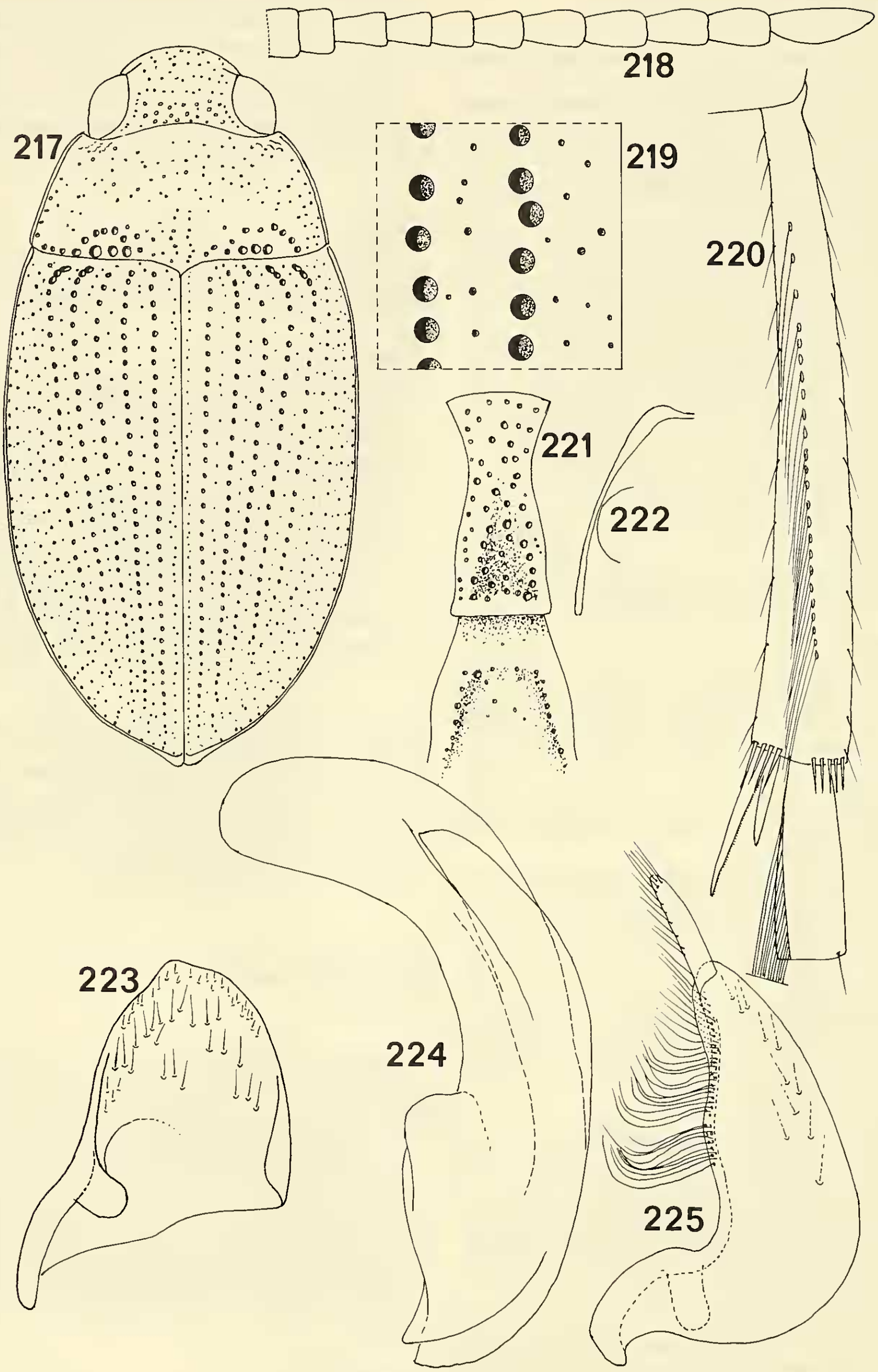
Material examined. – 116 ex. – Albania: 4 ex. (NHMW). – Algeria: 1 ex. (BMNH). – France: 26 ex. (NHMW, RMNH, Jongema, ZMAN, Vondel). – Greece: 8 ex. (NHMW, Kanaar, ZMAN). – Italy: 23 ex. (NHMW, CNCI, Jongema, ZMAN, RMNH). – Netherlands: 21 ex. (ZMAN, RMNH, Vondel). – Spain: 22 ex. (NHMW, CNCI, RMNH, ZMAN, Cuppen). – Yugoslavia: 10 ex. (NHMW, RMNH, ZMAN). – Locality not traced or unknown: 5 ex. (RMNH, NHMW).

24. *Haliplus ortali* sp. n.
(fig. 226-234)

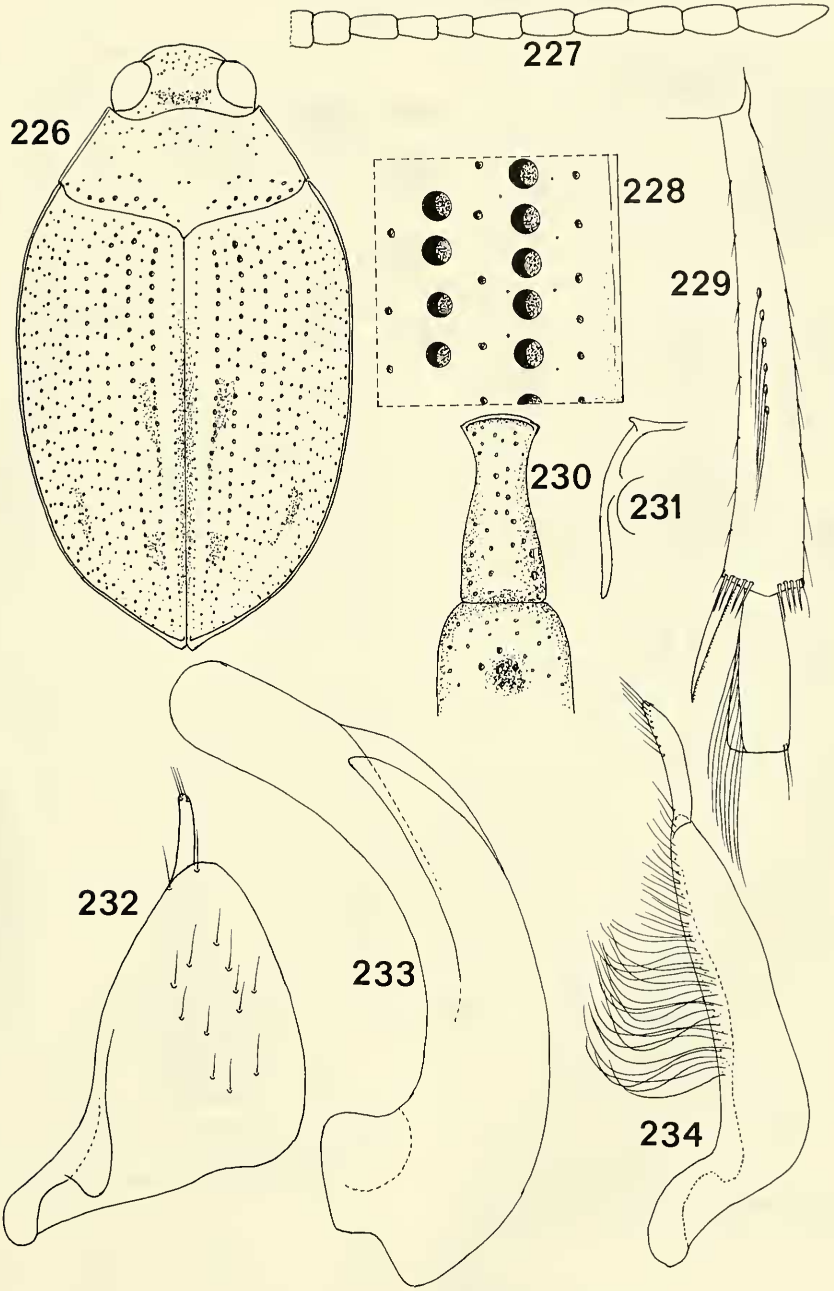
Type material: Holotype ♂, [Turkey] 'TR, Bismil ô, Diyarbakir, 29.5.1987 (35), Jäch' (NHMW). Paratypes (15 ex.): Israel: 1 ♂, 15.2.1982, Nesher quarry, rainpool, Haifa, 15.ii.1982, R. Ortal & A. Sofer, IES 2575, Col. 1751-01; 1 ♂, Nesher quarry, rainpool near Haifa, 27.i.1989, R. Ortal, IES 5344; 1 ♂, Golan, Birket sinndiane, 11.ii.1981, R. Ortal, IES 2502, Col. 2744; 1 ♀, Hula, Shosh pool, 12.i.1982, Z. Kuller & G. Gafny, IES 2599, Col. 1758; 1 ♂, 2 ♀, Berekhat, Nesher quarry, 26.xii.1989, R. Ortal, IES 5502; 1 ♂, Ein Abu Mashaq, 12.ix.1989, IES 5401 (HUJI). – Cyprus: 2 ♂, 4 ♀, Zakaki Marshes, ii.1948, G. Mavromoustakis (Angus). – Syria: 1 ♂, Damascus, brooklet (MNHN).

Diagnosis

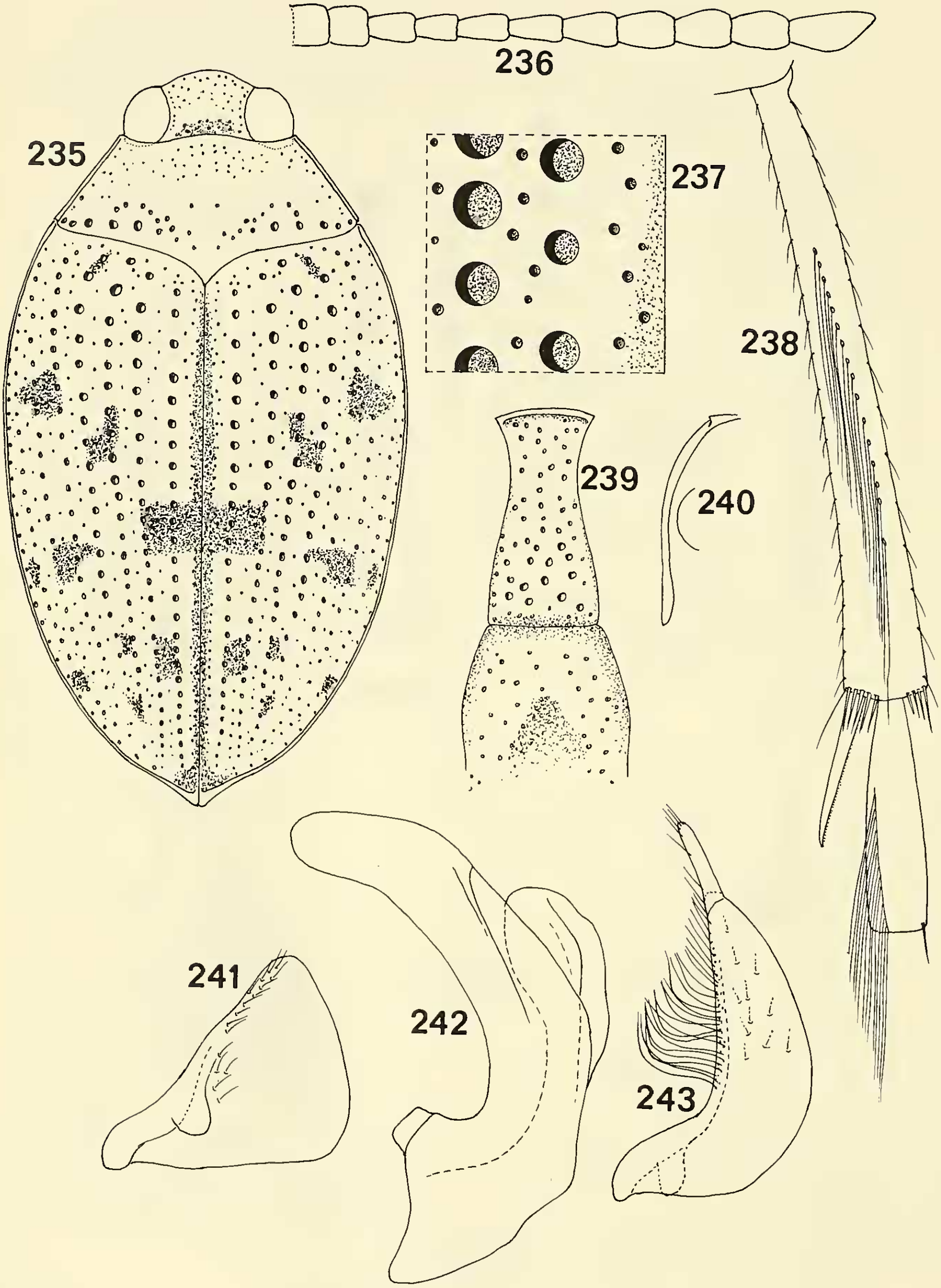
This species resembles very much species like *kulleri*, *jaechi* or even *abbreviatus*, *gafnyi* and *villiersi.* The males can be distinguished by the



Figs. 217-225. *Haliplus mucronatus*, Oostvoorne, Netherlands. – 217, dorsal view; 218, antenna; 219, elytral punctuation; 220, dorsal side of hind tibia; 221, prosternal process; 222, lateral view of prosternal process; 223, left paramere; 224, penis; 225, right paramere.



Figs. 226-234. *Haliplus ortali*, holotype. – 226, dorsal view; 227, antenna; 228, elytral punctuation; 229, dorsal side of hind tibia; 230, prosternal process; 231, lateral view of prosternal process; 232, left paramere; 233, penis; 234, right paramere.



Figs. 235-243. *Haliplus ovalis*, holotype. – 235, dorsal view; 236, antenna; 237, elytral punctuation; 238, dorsal side of hind tibia; 239, prosternal process; 240, lateral view of prosternal process; 241, left paramere; 242, penis; 243, right paramere.

pointed digitus on the left paramere. In the Turkish holotype that digitus is at the top provided with 3 setae, while the Israeli paratypes have only 1 seta.

Description

Length 2.9-3.4 mm, width 1.5-1.8 mm. Body oval, widest in the middle (fig. 226).

Head. – Yellow-brown to brown, slightly darkened on the vertex, weakly punctured, unpunctured band between the hind parts of the eyes. Distance between the eyes 1.4-2.0 × eye-width. Antennae yellow (fig. 227), palpi yellow.

Pronotum. – Yellow to yellow-brown on the disc, lateral borders straight, darkened and finely bordered. Width at the base 2.0 × the length in the middle and 1.6 × the width in front. Weakly and sparsely punctured, on the disc almost unpunctured, along the base some larger darkened punctures, along the base weakly impressed (fig. 226).

Elytra. – Yellow to yellow-brown, apical ⅔ of suture darkened, clear discal blotch connected to the dark suture or vague darkening and darkened puncture-rows on the disc and vague blotches in the apical half in the even intervals. Primary puncture-rows fairly strong, about 32 punctures in the first row. Secondary punctures moderately strong, accompanied by very small punctures (fig. 228), all punctures strongly darkened.

Ventral side. – Yellow to yellow-brown, pro- and metasternal process brown, elytral epipleura yellow, legs yellow-brown, darkened towards the coxae. Prosternal process slightly convex, narrowed near the coxae, moderately strongly punctured (fig. 230), lateral plicae sometimes interrupted along the front coxae (fig. 231). Metasternal process flat with a shallow impression in the middle, sparsely punctured (fig. 230). Coxal plates rather densely punctured, small punctures between the larger ones, sutural area only weakly and sparsely punctured. Hind margins of the fifth and sixth abdominal sternite with only few punctures, coxal plates reaching the fifth sternite. Setiferous striole about ⅕ of the tibia length, with about 6 coarse punctures, longer of the two tibial spurs ⅔ the length of the first tarsal segment (fig. 229).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side, penis and parameres as in figs. 232-234, left paramere with a pointed solid digitus, at the top provided with 1 to 3 setae.

Etymology. – Named after Dr. R. Ortal who collected part of the type-material.

Biology

In temporary pools and in brooklet.

Distribution (fig. 303)

South-east Turkey, Cyprus, Syria and Israel,

25. ***Haliplus ovalis*** Sharp
(figs. 235-243)

Haliplus ovalis Sharp, 1884: 440. Lectotype ♂ (here designated), 'Japan, Jokohama, 29.10.81, Lewis, Type, *Haliplus ovalis* Type D. S., Sharp Coll., 1905-313' (BMNH) [examined].

Haliplus ovalis; Zimmermann 1920: 314, 1924: 134, Takizawa 1931: 141, Wu 1932: 343, J. Balfour-Browne 1946: 436, Sato 1960: 252, 1984: 3, Ohkura 1962: pl. 64, Nakane 1963: 55, 1985a: 63, 1985b: 40, 1987: 30, Cho 1969: 166, Yoon 1988: 622.

Diagnosis

This species differs from the closely related *chinensis* in having the distance between the eyes more than 1.4 × the eye-width and in the male by the abruptly bent top of the penis.

Description

Length 4.1-4.3 mm, width 2.1-2.2 mm. Body oval, widest in the middle (fig. 235).

Head. – Yellow-brown, dark spot on vertex, weakly punctured. Distance between the eyes 1.5 × eye-width. Antennae (fig. 236) and palpi yellow-red.

Pronotum. – Yellow, lateral borders straight, finely bordered. Densely, on the disc very sparsely punctured, basal punctures widened and darkened, sometimes only slightly.

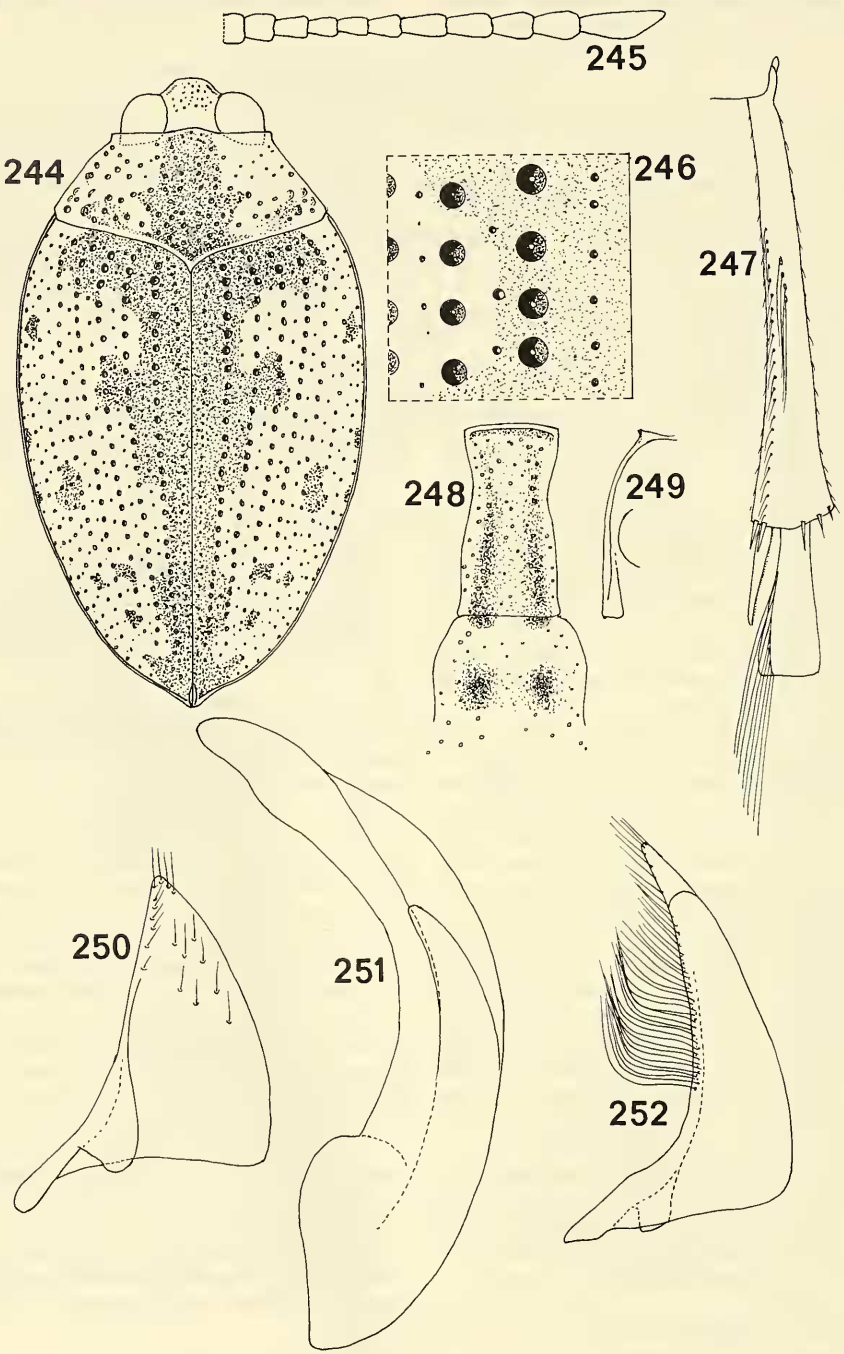
Elytra. – Yellow, moderately strong primary punctures, about 40 in the first row. Secondary punctures numerous. All punctures darkened (fig. 237). Suture, apical point and 9 or 10 spots darkened, central spots on first and third interstriae sometimes connected with suture (fig. 235).

Ventral side. – Body yellow to yellow-red, elytral epipleura yellow, legs yellow-red, gradually darkened towards the coxae. Prosternal process flat, strongly and densely punctured, narrowed near the coxae (fig. 239), lateral plicae complete (fig. 240). Metasternal process flat with a pit in the middle, rather weakly punctured (fig. 239). Setiferous striole on dorsal side of hind tibia almost half of the tibia length, with about 14 punctures, longer of the two tibial spurs two thirds the length of the first tarsal segment (fig. 238).

Male sexual characters. – First three tarsal segment of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 241-243.

Distribution (fig. 309)

Japan: Kyushu, Honshu. The record of Korea (Takizawa 1931) probably concerns *chinensis*. The



Figs. 244-252. *Haliplus pulchellus*, lectotype. – 244, dorsal view; 245, antenna; 246, elytral punctuation; 247, dorsal side of hind tibia; 248, prosternal process; 249, lateral view of prosternal process; 250, left paramere; 251, penis; 252, right paramere.

records of China (Zaitsev 1953) likely concern *chinensis*.

Remarks

Types of the very closely related *ovalis* and *chinensis* have been examined and compared. Unfortunately the holotype of *chinensis* is a female. The shape of the penis of the lectotype and other examined Japanese specimens of *ovalis* is different from that of the continental specimens I have seen. So far I consider the Japanese specimens to belong to *ovalis* and the continental specimens to *chinensis*. J. Balfour-Browne (see Sato 1984) already noticed a difference in continental material and obviously planned to describe *Haliplus ovalis* ssp. *sinicus* from Djalantun, but that name is not known to be published and is thus unavailable.

Material examined. – 11 ex. – Japan: 1 ♂ (lectotype) (BMNH); 1 ♀, Tokio, Ahlwarth (ZMHB); 1 ♀, surr. Tokio, Bodemeyer (RMNH); 1 ♂, Murakami, Niigata Pref., 6-11.viii.1961, M. Sato; 1 ♀, Kurokawa, N-Echigo, 5.viii.1961, M. Sato (ZMUC); 1 ex., Settsu, 5.v.1931; 1 ex., surr. Tokio, E. v. Bodemeyer; 1 ex., Lewis (SMFD); 1 ex., Yokohama, 28.ix-3.xi.1881, G. Lewis (MNHN); 2 ex., Ichinokawa, Aso T., Kumamoto Pref., 28.viii.1986, E. Matsui (Vondel).

26. ***Haliplus pulchellus*** Clark
(figs. 244-252)

Haliplus pulchellus Clark, 1863 : 418.
Haliplus oceanicus Régimbart, 1886 : 139.
Haliplus pulchellus var. *indicus* Régimbart, 1899 : 189.

Diagnosis

This species differs from other species in the area by the small distance between the eyes and the double furrowed prosternal process.

Description

Length 2.5-3.4 mm, width 1.5-2.0 mm. Body oval, widest just before the middle (fig. 244).

Head. – Brown to dark brown, darkened along the eyes and near the antennae, sometimes with a weak arrow-like darkening in the middle. Sparsely and weakly, behind the eyes more strongly punctured. Distance between the eyes 0.9-1.1 × eye-width. Antennae yellow to brown-yellow (fig. 245), palpi yellow-red to brown.

Pronotum. – Yellow to yellow-red, large median dark blotch that can be reduced to a round blotch on the anterior half with a partly reduced or vague or completely absent blotch on the posterior half (fig. 244). Lateral borders straight to slightly convex, anterior corners concave, clearly, vaguely or not visibly bordered, margin never reaching the anterior corner. Apical corners rounded, base near the scutellum usually finely impressed. Strongly, anteriorly weaker punctured, near the basal corners with one or two stronger punctures in a slight depression. Basal punctures darkened.

Elytra. – Yellow to yellow-red, clear and extended markings along the suture and along the base until the fifth primary puncture-row, a central blotch in the third interval connected to the suture and various small blotches in the lateral part (fig. 244). Primary punctures of average strength, stronger towards the base, about 30 punctures in the first row. Secondary punctures relatively strong accompanied by some very small punctures. All punctures darkened except the central hole (fig. 246). Lateral borders sometimes slightly serrulate in the basal part.

Ventral side. – Body yellow-brown to dark brown, elytral epipleura yellow to yellow-brown, legs yellow-brown with brown to dark-brown femora and coxae. Prosternal process with two strong grooves, bordered anteriorly, punctured, sometimes strongly, especially in the grooves, weakly narrowed near the coxae, slightly diverging towards the apex (fig. 248), lateral plicae complete (fig. 249). Metasternal process flat with two pits, these pits sometimes very strong and than almost forming one confluent pit, sparsely punctured (fig. 248). Coxal plates rather sparsely, near the suture weakly punctured, sutural corners more or less rectangular. Sternites with complete puncture-rows. Last sternites almost completely covered with strong punctures, apical point with a very short ridge. Setiferous striole on dorsal side of hind tibia very short, very close to the lateral row of setae and often hardly to distinguish from it, longer of the tibial spurs about ⅔ × the length of the first tarsal segment (fig. 247).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 250-252.

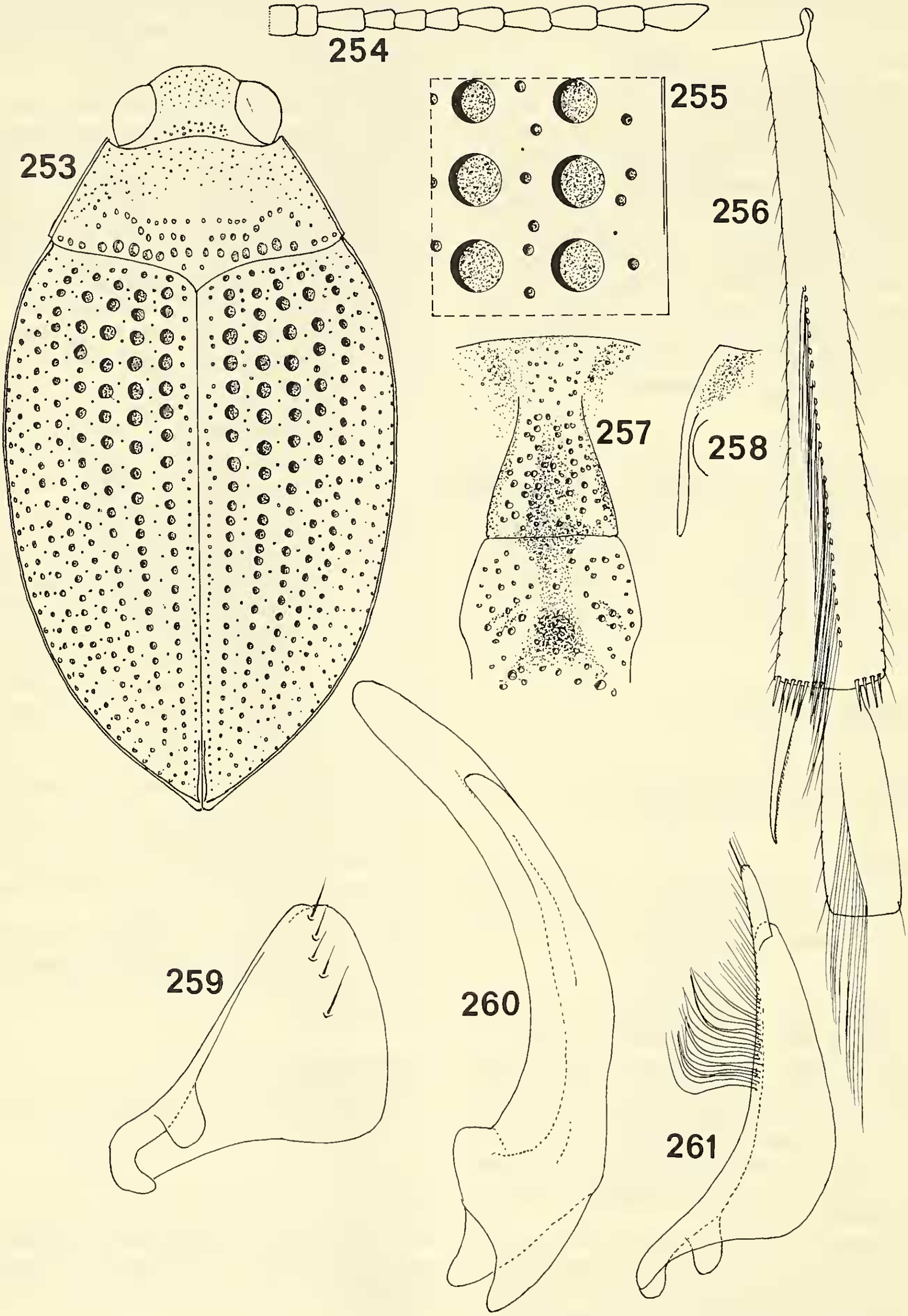
Distribution (fig. 307)

China along the coast north to Xiamen; Thailand; Vietnam; Indonesia: Sumatra, Java, Sulawesi; India; Sri Lanka.

Remarks

This species from oriental origin is included in this revision because it penetrates into China, especially along the coast. The species will be treated completely, however, in a revision of the Oriental Haliplidae.

Material examined from the treated area: 2 ex., China,



Figs. 253-261. *Haliplus rubidus*, France medit. – 253, dorsal view; 254, antenna; 255, elytral punctuation; 256, dorsal side of hind tibia; 257, prosternal process; 258, lateral view of prosternal process; 259, left paramere; 260, penis; 261, right paramere.

Amoy [Xiamen], Galatea (ZMUC). The other material will be treated in the revision of oriental Haliplidae.

27. *Haliplus rubidus* Perris
(figs. 253-261)

Haliplus rubidus Perris, 1857: 117. Types probably in Ecol. Agricult. Montpellier, France [not examined].
Haliplus perforatus Schaum, 1859: 48. Depository of types unknown [not examined].
Haliplus rubidus; Marseul 1882: 107, Seidlitz 1887: 31, Zimmermann 1920: 314, 1924: 132, Guignot 1928: 143, 1933: 230, 1947: 50, 1959: 35, Scholz 1929: 15, Burmeister 1939: 214, Lagar Mascaro 1968: 72, Ienistea 1978: 294, Franciscolo 1979: 119.
Haliplus perforatus; Zimmermann 1920: 314.

Diagnosis

Closely related to *flavicollis*, from which it differs in the larger punctures on the elytral base, the more pronounced shoulders, the wider distance between the eyes and the usually larger size.

Description

Length 3.9-4.4 mm, width 2.0-2.3 mm. Body with strong shoulders, tapering strongly behind the middle (fig. 253).

Head. – Yellow-red to rust-coloured, weakly punctured. Distance between the eyes 1.7-1.9 × eye-width. Antennae (fig. 254) and palpi yellow-red to rust-coloured.

Pronotum. – Yellow-red to rust-coloured. Lateral borders straight, clear darkened margins, narrowed anteriorly. Densely and weakly, basally strongly punctured, some basal punctures widened (fig. 253).

Elytra. – Yellow-red to rust-coloured, very strong primary puncture-rows, near the base punctures wider then the distance from each other (fig. 255), about 30 punctures in the first row. Secondary punctures moderately strong, 20 in the second interval.

Punctures weakly darkened. No markings present.

Ventral side. – Yellow-red to rust-coloured, elytral epipleura yellow-red, legs yellow-red to rust-coloured, darkened towards the coxae. Prosternal process flat or slightly impressed and very wide apically, coarsely punctured, narrowed strongly near the coxae (fig. 257), lateral plicae absent in front of the coxae (fig. 258). Metasternal process flat, strong pit in the middle, coarsely punctured (fig. 257). Setiferous striole on dorsal side of hind tibia more than half of the tibia length, longer of the two tibial spurs little more than half the length of the first tarsal segment (fig. 256).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 259-261.

Biology

Stagnant water in pools, dune-pools.

Distribution (fig. 299)

South of France along Atlantic ocean and along the Mediterranean Sea, Italy in the province Liguria, Spain, Portugal, Morocco, Canary Islands.

Material examined. – 31 ex. – France: 1 ex., Lac d'Hourtin, Medoc, 28.ix.1973 (Jongema); 1 ex., Biarritz; 1 ex., Pyrenaei (ZMAN); 2 ex., Gallia m.; 2 ex., Gironde, Vauloger; 1 ex., France Merid, Gironde, de Vauloger; 2 ex., F. de la Teste de Vauloger (NHMW); 3 ♂, 2 ♀, Pyrenees, Biarritz; 1 ♂, 2 ♀, Sauveterre, Gard, v.1928, Guignot; 1 ex.; 1 ex., Landes; 2 ex., Pyrenees (BMNH). – Portugal: 2 ex., Alentejo prov. Rio Mira nr. S. Ana da Serra, 21.ix.1976, no. 60, 37°38'N 8°13'W, v. Berge Henegouwen (RMNH); 1 ex., Algarve, Silves, Ribeira de Arade, 10.ii.1982; 1 ex., Algarve, Porto de Lagos, barrage, 12.ii.1982 (Cuppen). – Morocco: 1 ♀, Tanger, *Haliplus fulvus* (MHNG); 1 ♂, Tanger, vii.1895 (MNHN). – Locality unknown: 1 ex. (BMNH).

28. *Haliplus sharpi* Wehncke
(figs. 262-270)

Haliplus sharpi Wehncke, 1880: 74. Lectotype ♀ (here designated), 'China, Sharp, Dr. Régimbart vidit 1898' (MNHN) [examined]
Haliplus tsukushiensis Yoshimura, 1932: 102. Depository of types unknown [not examined].
Haliplus sharpi; Sharp 1884: 440, Zimmermann 1920: 316, 1924: 137, Takizawa 1931: 142, Wu 1932: 343, Zaitsev 1953: 76, Nakane 1963: 55, 1985a: 63, 1985b: 40, 1987: 30, Sato 1984: 3.
Haliplus tsukushiensis; Ohkura 1962: pl. 64, Nakane 1963: 55, 1985b: 40, Sato 1984: 3.

Diagnosis

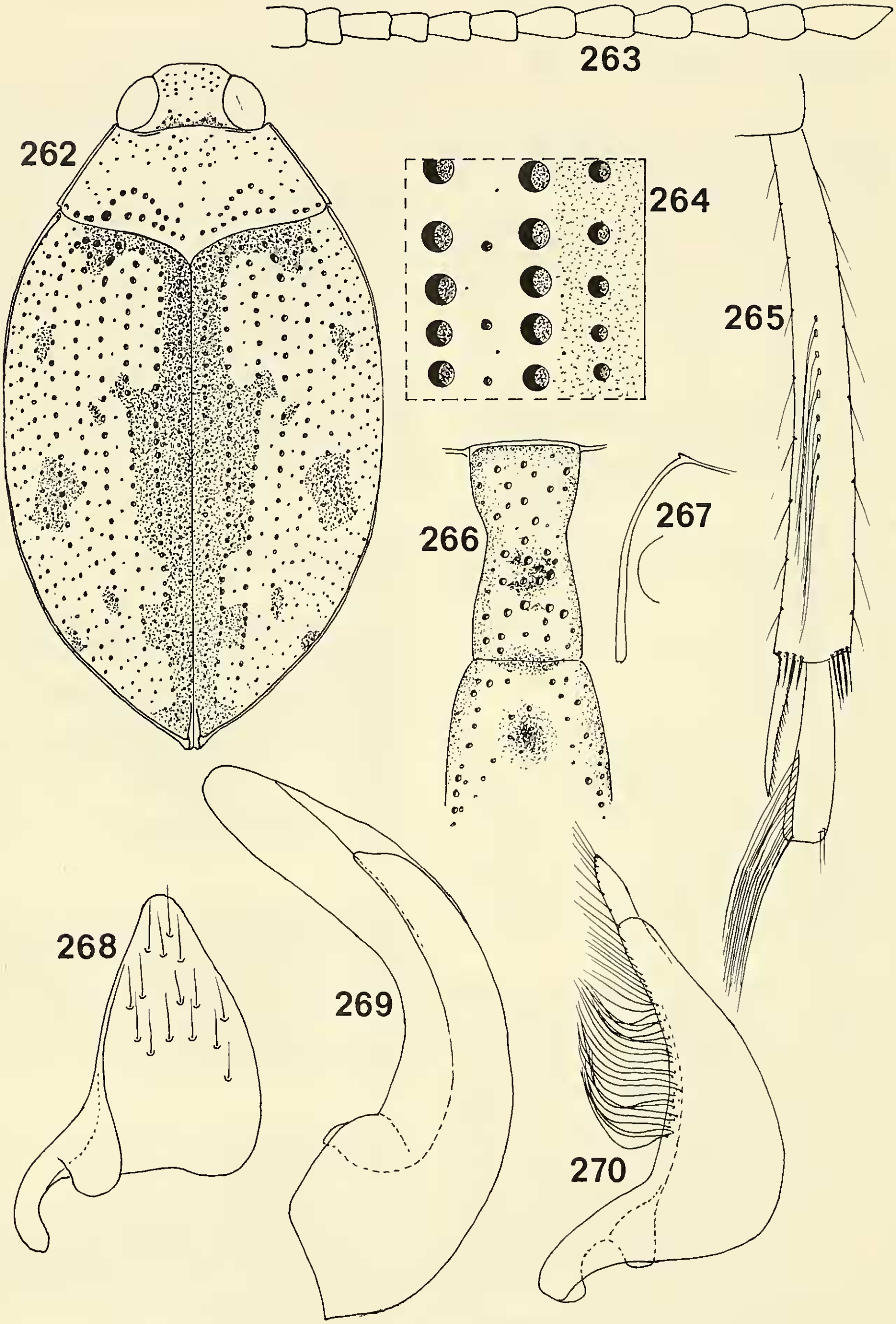
This species could be confused with specimens of *diruptus* in which a basal dark band is present on the elytra. The prosternal process in *sharpi* is wide and hardly narrowed near the coxae, while *diruptus* has a narrow prosternal process, which is strongly narrowed near the coxae. In the male the penis of both species is clearly different.

Description

Length 3.6 mm, width 1.9 mm. Body oval, widest before the middle (fig.262).

Head. – Yellow-brown with darkened vertex and front-margin, moderately punctured. Distance between the eyes 1.3 × eye-width. Antennae yellow, first segment yellow-brown, third segment clearly longer than wide, fifth segment slightly longer than fourth (fig. 263). Palpi yellow.

Pronotum. – Yellow. Lateral borders straight, finely bordered. Sparsely, basally and anteriorly more densely punctured, on each side of the base



Figs. 262-270. *Haliplus sharpi* (262-267, lectotype; 268-270, from Korea). – 262, dorsal view; 263, antenna; 264, elytral punctuation; 265, dorsal side of hind tibia; 266, prosternal process; 267, lateral view of prosternal process; 268, left paramere; 269, penis; 270, right paramere.

with a row of partly widened and darkened punctures (fig. 262).

Elytra. – Yellow to yellow-brown, rather strong primary puncture-rows, about 36 punctures in the first row. Secondary punctures in the first interval strong and dense, in the other intervals with normal and very small punctures (fig. 264). All punctures darkened. Distinct markings along the base, suture and apical point, connected with blotches in the second interval, blotches in the fourth and sixth interval (fig. 262).

Ventral side. – Body yellow-red to brown-red, abdominal segments darkened basally, elytral epipleura yellow, legs brown-red, darkened towards the coxae. Prosternal process flat, slightly impressed in the apical part, densely punctured, slightly narrowed near the coxae, widened towards the apex (fig. 266), lateral plicae complete (fig. 267), anterior edge of prosternum strongly bordered, pro-episternum unpunctured. Metasternal process grooved and with a pit in the middle, densely punctured, basally as wide as the prosternal process (fig. 266). Coxal plates strongly punctured, width of punctures less than the distance to each other, accompanied by some very small punctures, area along the suture impressed and only weakly and sparsely punctured. Setiferous striole on dorsal side of hind tibia about ⅓ × the tibia length, longer of the two tibial spurs about ¾ of the length of the first tarsal segment (fig. 265).

Male sexual characters. – First three tarsal segments of fore- and midlegs slightly widened, scaly hairs on ventral side. Penis and parameres as in figs. 268-270.

Biology

Stagnant pools. Caught at light and in a hotel room.

Distribution (fig. 310)

China, prov. Jiangsu; Japan, Hokkaido and Shikoku; Korea.

Material examined. – 8 ex. – China: 1 ♀ (lectotype) (MNHN ex coll. Wehncke); 1 ex., Jiangsu, Shanghai, summer 1943, Marist Brothers (ISNB). – Japan: 1 ♀, 'Japon, Heller, Dr. Régimbart vidit 1898, ♀ *Haliplus sharpi* Wehncke, 1880 (paralectotype) (MNHN ex coll. Wehncke); 1 ex., Shikoku, Matsuyama, vii.1959, Light trap, (ZMUC). – Korea: 2♂, 1 ♀, Sariwon,12-22.vii.1956, M. Magyar, (ISNB); 1 ♀, Prov. South Pyongan, Pyongyan, room of Hotel Te-dong, 30.vii.1975, J. Papp and A. Vojnits (CNCI); 1 ♂, 1 ♀, Kyongpuk-do, Yongpung-kun, Hwayon-pond, 2.viii.1988, Sung Hwa Lee (Vondel).

29. *Haliplus variegatus* Sturm
(figs. 271-282)

Haliplus variegatus Sturm, 1834: 157. Syntypes probably lost [as most Sturm-types] [not examined].

Haliplus subnubilis Babington, 1836: 177. Syntypes not located [not examined].

Haliplus variegatus var. *obsoletus* Westhoff, 1881: 43. Syntypes not located [not examined].

Haliplus variegatus ab. *pallidior* Müller, 1900: 115. Lectotype ♂ (here designated) [Yugoslavia] 'Castelnuovo, Humler, TYPUS, Museo Civico di Trieste, *H.variegatus* ab. *pallidior* M.' (MSNT) [examined].

Haliplus pantherinus Sahlberg, 1900? (preoccupied).

Haliplus leopardinus Sahlberg, 1900: 183 (replacement name for *H. pantherinus*). Lectotype ♂ (here designated) [Greece, Kérkira] 'Corfu, J. Sahlb., *Haliplus pantherinus* Sahlb. Type, Collect. Hauser, v. *leopardinus* det. Ganglbauer' (NHMW) [examined]

Haliplus transvolgensis Semenov, 1904: 216. Lectotype ♀ (here designated) [USSR] 'Nicolajevskij-Gorodok, Saratov, 431.V.[19]00, Sacharov, *Haliplus transvolgensis* mTyp., A. Seminov det. (ZMAS)[examined]. **Syn. n.**

Haliplus variegatus subsp. *galilea* Sahlberg, 1913: 40. Types not located [not examined].

Haliplus variegatus; Aubé 1836: 28, 1838: 16, Erichson 1837: 184, Schaum 1848:42, Thomson 1854: 485, Régimbart 1877: 354, Westhoff 1881: 43, Seidlitz 1887: 30, Müller 1900: 114, Apfelbeck 1904: 360, Fiori 1904: 196, Sahlberg 1913: 39, Zimmermann 1920: 317, 1924: 136, Guignot 1928: 145, 1933: 231, 1947: 51, Scholz 1929: 17, F. Burmeister 1939: 214, Balfour-Browne 1940: 152, 1953: 5, Horion 1941: 366, Csiki 1946: 560, Zaitsev 1953: 73, Gueorguiev 1958: 44, 1960: 23, 1981: 401, Lindroth 1960: 46, Lagar Mascaro 1968: 73, Freude 1971: 15, Franciscolo 1972: 60, 1979: 121, Hosseinie 1974: 241, 1978: 167, Ienistea 1974: 208, 1978: 295, Ali 1976: 92, Galewski 1976: 29, Mateleshko 1977: 68, Fichtner 1981: 328, Holmen 1981: 2, 1987: 116, E. Burmeister 1982: 94, 1987: 184, Leblanc 1984: 8, Vondel 1985: 33, 1989a: 58, Lundberg 1986: 11, Zakharenko & Moroz 1988: 283, Nilsson 1988: 6.

Haliplus subnubilis; Schaum 1848: 42, Zimmermann 1920: 317.

Haliplus variegatus var. *obsoletus*; Guignot 1933: 244, Zaitsev 1953: 73, Gueorguiev 1960: 23.

Haliplus variegatus ab. *pallidior*; Zimmermann 1920: 317, Scholz 1929: 17, Guignot 1933: 244, Zaitsev 1953: 74, Gueorguiev 1958: 44, 1960: 23, 1963: 216, Ienistea 1978: 295, Leblanc 1984: 8.

Haliplus leopardinus; Apfelbeck 1904: 360, Sahlberg 1913: 39, Zimmermann 1920: 317, Döbler 1976: 182.

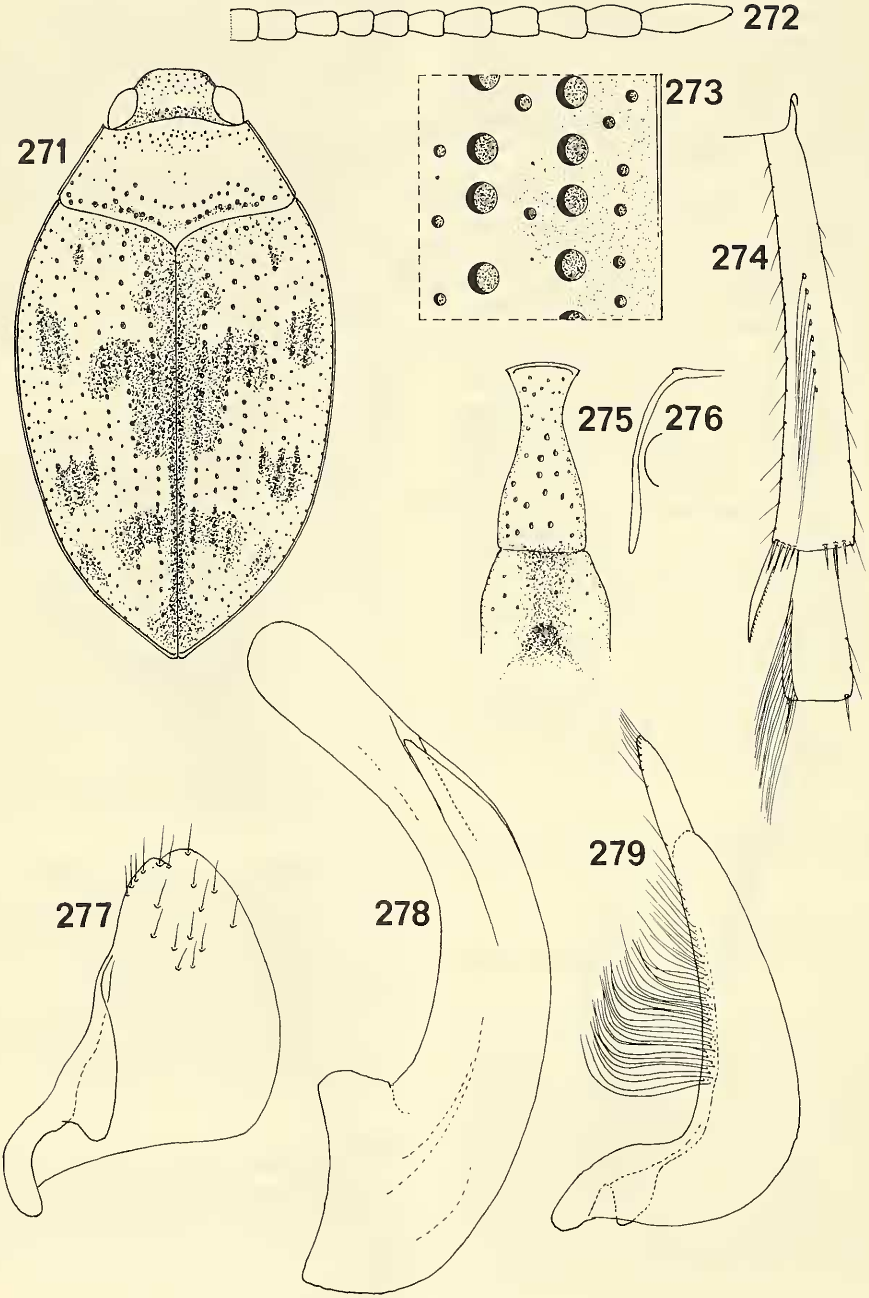
Haliplus transvolgensis; Zaitsev 1905: 37, Zimmermann 1920: 316 1924: 135, Kinel 1929: 219, Scholz 1929: 18, Burmeister 1939: 214, Csiki 1946: 559.

Diagnosis

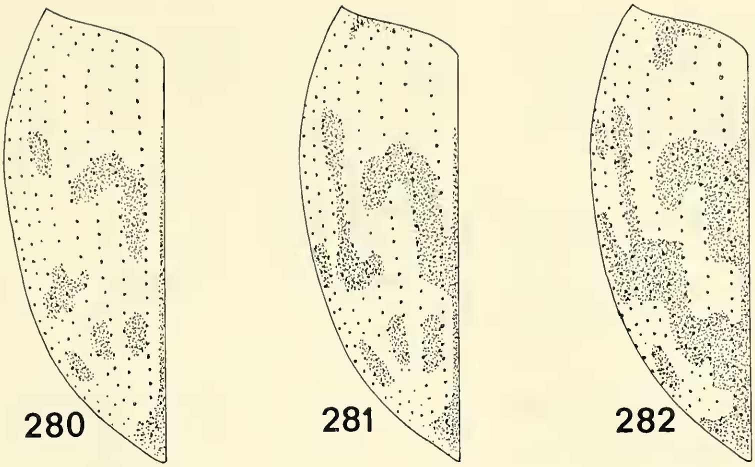
A very variable species in size, colour and maculation. The distance between the eyes, 1.7-2.0 × eye-width, usually distinguishes it from related species of the same size, especially in the Middle-East.

Description

Length 2.6-3.4 mm, width 1.4-1.8 mm. Body oval, widest before the middle (fig. 271).



Figs. 271-279. *Haliplus variegatus*, Texel, Netherlands. – 271, dorsal view; 272, antenna; 273, elytral punctuation; 274, dorsal side of hind tibia; 275, prosternal process; 276, lateral view of prosternal process; 277, left paramere; 278, penis; 279, right paramere.



Figs. 280-282. *Haliplus variegatus*, elytra. – 280, lectotype of *H. variegatus* var. *pallidior*; 281, from Castelnuovo, Yugoslavia; 282, from Trenton, England.

Head. – Yellow to rust-coloured, darkened vertex, rather weakly punctured, on the vertex with stronger darkened punctures, between the eyes with an unpunctured band. Distance between the eyes 1.7-2.0 × eye-width. Antennae yellow to yellow-brown, third segment longer than the fourth or fifth segment (fig. 272), palpi yellow to rust-coloured.

Pronotum. – Yellow to rust-coloured, sometimes anterior and basal margins slightly darkened. Lateral borders straight, finely bordered. Sparsely, on the disc almost not, basally strongly punctured, basal punctures darkened (fig. 271).

Elytra. – Yellow to rust-coloured, rather strong primary puncture-rows, 26-32 punctures in the first row. Secondary punctures in the first interval fairly strong, in the remaining intervals moderately strong, accompanied by very small punctures. All punctures darkened (fig. 273). Extensive markings on the disc, along the suture, on the apex and on the even intervals with extensions to the odd intervals. The central blotches are not always connected to the suture (figs. 271, 280-282).

Ventral side. – Yellow-red to rust-coloured, elytral epipleura yellow, legs yellow-red to rust-coloured, darkened towards the coxae. Prosternal process flat or slightly convex, narrowed near the coxae (fig. 275), lateral plicae complete (fig. 276), rather coarsely punctured. Metasternal process slightly to strongly and widely grooved, coarsely punctured (fig. 275). Coxal plates sparsely, laterally more densely punctured, with a few very small punctures, apical point broadly rounded. Setiferous striole about ¼ of the tibia length, with about 5 punctures, longer of the two tibial spurs ⅔ the length of the first tarsal segment (fig. 274). Hind tibia about 3 × as long as the first tarsal segment.

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 277-279.

Biology

In stagnant waterbodies with fresh water with often a vegetation of Characeans, *Sphagnum* or *Hypnum*, in temporary dune-pools, in peat bogs. The third-stage larva was first described by Schiødte (1864).

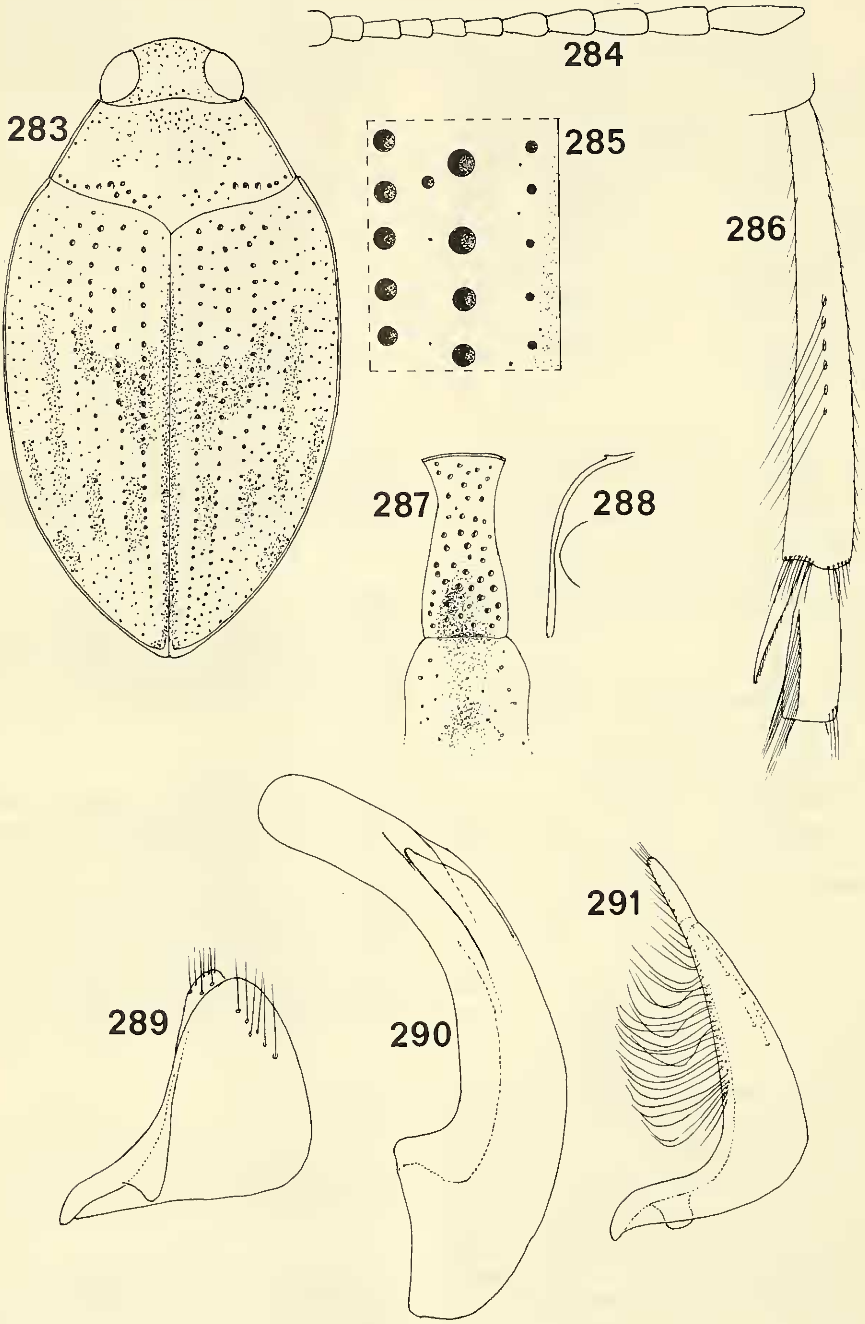
Distribution (fig. 296)

Europe: From Ireland and England to the central and southern part of European USSR, northwards to the south of Norway, Sweden and Finland and southwards to Spain, Italy and Greece. Algeria, Israel, Turkey, Syria. The records from Iraq (Ali 1976), Iran (Hosseinie 1974, 1978) and Afghanistan (Gueorguiev 1963) most likely concern other species like *abbreviatus* or *villiersi*. The record from West Siberia (Zaitsev 1905, as *transvolgensis*) probably concerns *H. maculatus* or *angusi*.

Remarks

Examination of the type of *transvolgensis* showed that it is conspecific with *variegatus*. In the Mediterranean area small specimens are present, described as *pallidior* or *leopardinus*, but in my opinion these are conspecific with *variegatus*.

Material examined. – 425 ex. – Algeria: 2 ex. (BMNH). – Austria: 49 ex. (ZMAN, RMNH, NHMW, RMNH). – Belgium: 1 ex. (NHMW). – Denmark: 2 ex. (BMNH, ZMAN). – England: 31 ex.BMNH, ZMAN, RMNH). – France: 69 ex. (MNHN, ZMAN, RMNH, NHMW, Huijbregts, Vondel). – Germany: 25 ex. (ZMAN, RMNH, NHMW, BMNH). – Greece: 1 ♂ (lectotype *leopardinus*) (NHMW), 9 ex. (paralectotypes



Figs. 283-291. *Haliplus villiersi* (283-288, holotype; 289-291, from type-locality). – 283, dorsal view; 284, antenna; 285, elytral punctuation; 286, dorsal side of hind tibia; 287, prosternal process; 288, lateral view of prosternal process; 289, left paramere; 290, penis; 291, right paramere.

leopardinus) (2 ♂, 3 ♀ NHMW; 1 ♀ UZMH; 1 ex. OLML; 1 ♂, 1 ♀ ZSMC); 38 ex. (BMNH, ZMAN, NHMW, RMNH, Huijbregts). – Hungary: 7 ex. (ZMAN, NHMW). – Ireland: 3 ex. (BMNH). – Israel: 2 ♂, Berekhat Zemorot nr. Ashquelon, 15.i.1981 (NHMW). – Italy: 15 ex. (BMNH, CNCI, NHMW, Huijbregts, Jongema). – Netherlands: 108 ex (RMNH, Schilthuizen, Cuppen, ZMAN, BMNH). – Poland: 6 ex. (BMNH, ZMAN). – Spain: 4 ex. (ZMAN, NHMW). – Sweden: 2 ex. (BMNH). – Switzerland: 1 ex. (BMNH). – Turkey: 1 ♀ (MNHN). – USSR: 1 ♀, (lectotype *transvolgensis*) (ZMAS). – Yugoslavia: 8 ex. (lectotype and 4 paralectotypes of *pallidior*) (MSNT); 10 ex. (NHMW, CNCI). – Locality not traced or unknown: 30 ex. (BMNH, ZMAN, MHNG, RMNH, NHMW).

30. *Haliplus villiersi* Legros
(figs. 283-291)

Haliplus villiersi Legros, 1972: 573: Holotype ♂, 'Iran, Zabol, IV.1965, Museum Paris, Mission Franco-Iranienne 1965, A, Type, *Haliplus (Liaphlus) villiersi* n. sp., C. Legros det.' (MNHN) [examined].

Diagnosis

A variable species, that is closely related to *abbreviatus* and *variegatus*, from which it can be distinguished by the usually impressed prosternal process. Maybe *abbreviatus* and *villiersi* are conspecific.

Description

Length 3.0-3.4 mm, width 1.7-2.0 mm. Body oval, sides subparallel, shoulders a little pronounced (fig. 283).

Head. – Yellow-brown, weakly punctured. Distance between the eyes about 1.6 × eye-width. Antennae (fig. 284) and palpi yellow..

Pronotum. – Yellow-red, lateral borders straight, narrowed anteriorly, finely bordered. Weakly, along the base more strongly, on the disc more sparsely punctured, basal punctures slightly darkened (fig. 283).

Elytra. – Yellow to yellow-brown, rather weak to moderately strong primary puncture-rows, 30 to 35 punctures in the first row. Punctures of 8th and 9th row with long hairs. Secondary punctures in two types: moderately strong or very weak (fig. 285). All punctures darkened. Usually brown markings on the suture, apex, even intervals and sometimes in the first interval (fig. 283), the markings can be very weak.

Ventral side. – Body yellow to yellow-red, elytral epipleura yellow, legs yellow-red. Prosternal process flat or slightly impressed apically, coarsely punctured, slightly narrowed near the coxae (fig. 287), lateral plicae complete (fig. 288). Metasternal process flat or grooved in the middle and with a central pit (fig. 287), weakly punctured. Setiferous striole on dorsal side of hind tibial about one third of the tibia length, longer of the two tibial spurs ¾ × the length of the first tarsal segment (fig.286).

Male sexual characters. – First three tarsal segments of fore- and midlegs widened, scaly hairs on ventral side. Penis and parameres as in figs. 289-291.

Distribution (fig. 305)

Iran.

Material examined. – 6 ex. – Iran: 1 ♂ (holotype); 1 ♂, 4 ♀, Zabol, 19.iv.1965, Mission Franco-Iranienne 1965 (1 ♀ allotype) (MNHN)

Unnamed material

The specimens I failed to determine are listed below. Some of them might belong to still undescribed species.

Species near *H. diruptus*. – [China] 'Yunnan Fou, Yunnan, R. Mouchamps det. 63, *Haliplus diruptus* B.Br.'(1 ♀, 1 ♂ without aedeagus) (ISNB). Belonging to *Haliplus diruptus* or *H. davidi* or to an undescribed species. – [China, Beijing] 'Peping, Collector C. F. Wu, Col. Gschwendtner, *simplex* Clark Gschwendtner' (2♀)(OLML). Possibly belonging to *H. diruptus* or *H. davidi*. – [China] 'Yunnan Fou, Yunnan, H. Perrot, ♀ (MNHN). Possibly belonging to *H. diruptus* or *H. davidi*.

Species near *H. variegatus*. – [USSR] 'Ross. O.' (2 ♀) (BMNH). Possibly belonging to an undescribed species.

Species near *H. ortali*. – [Iran] 'Perse, Susa, iv.1899, Escalera, *Haliplus* sp.x., Dr. Régimbart vidit 1900 (1 ♀) (MNHN). Possibly belonging to *H. ortali*.

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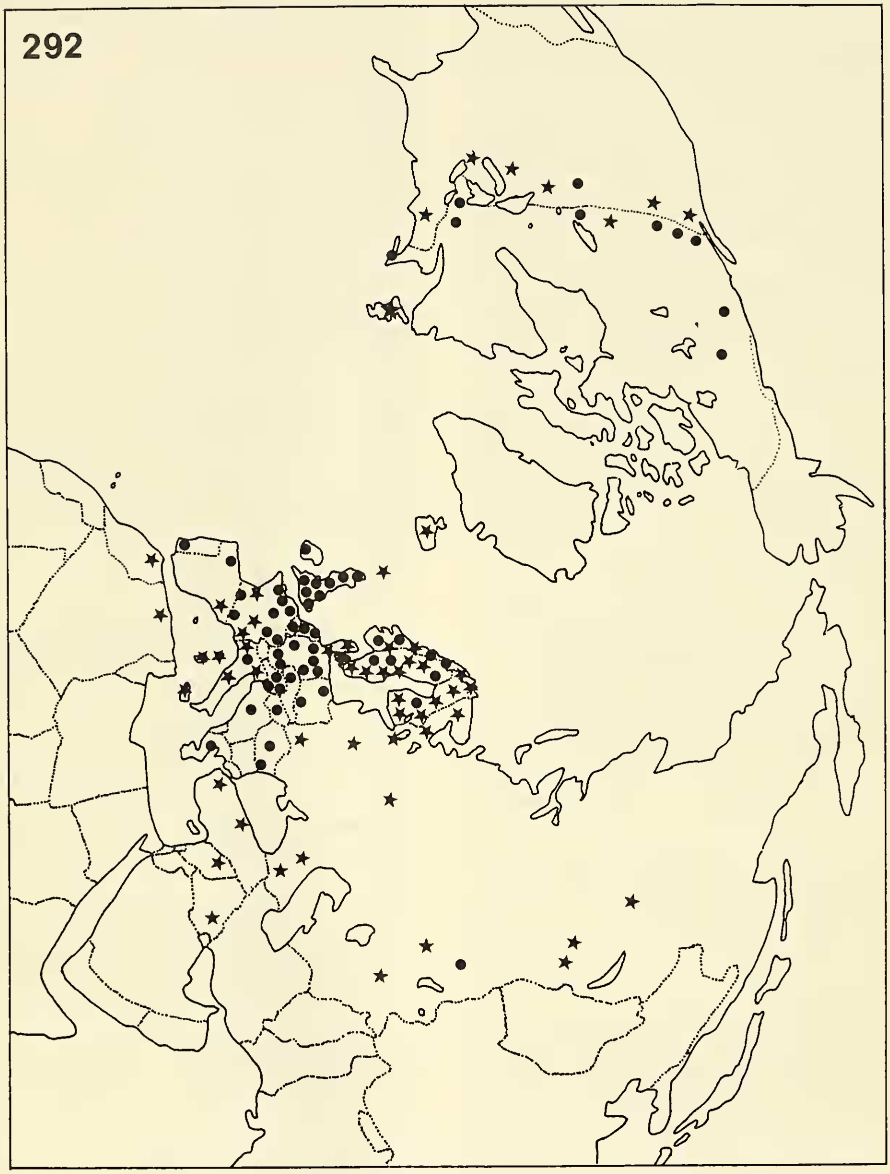
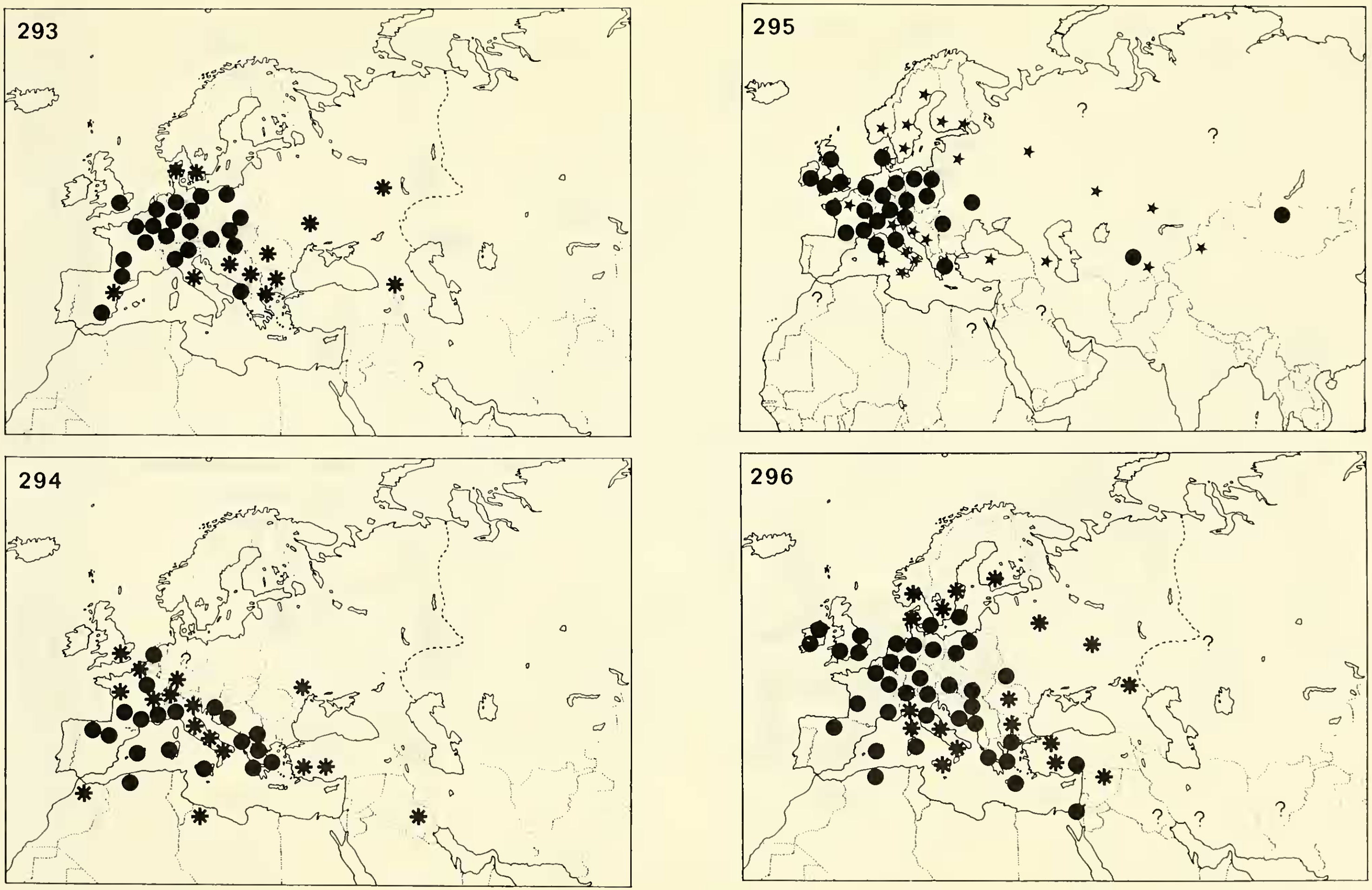
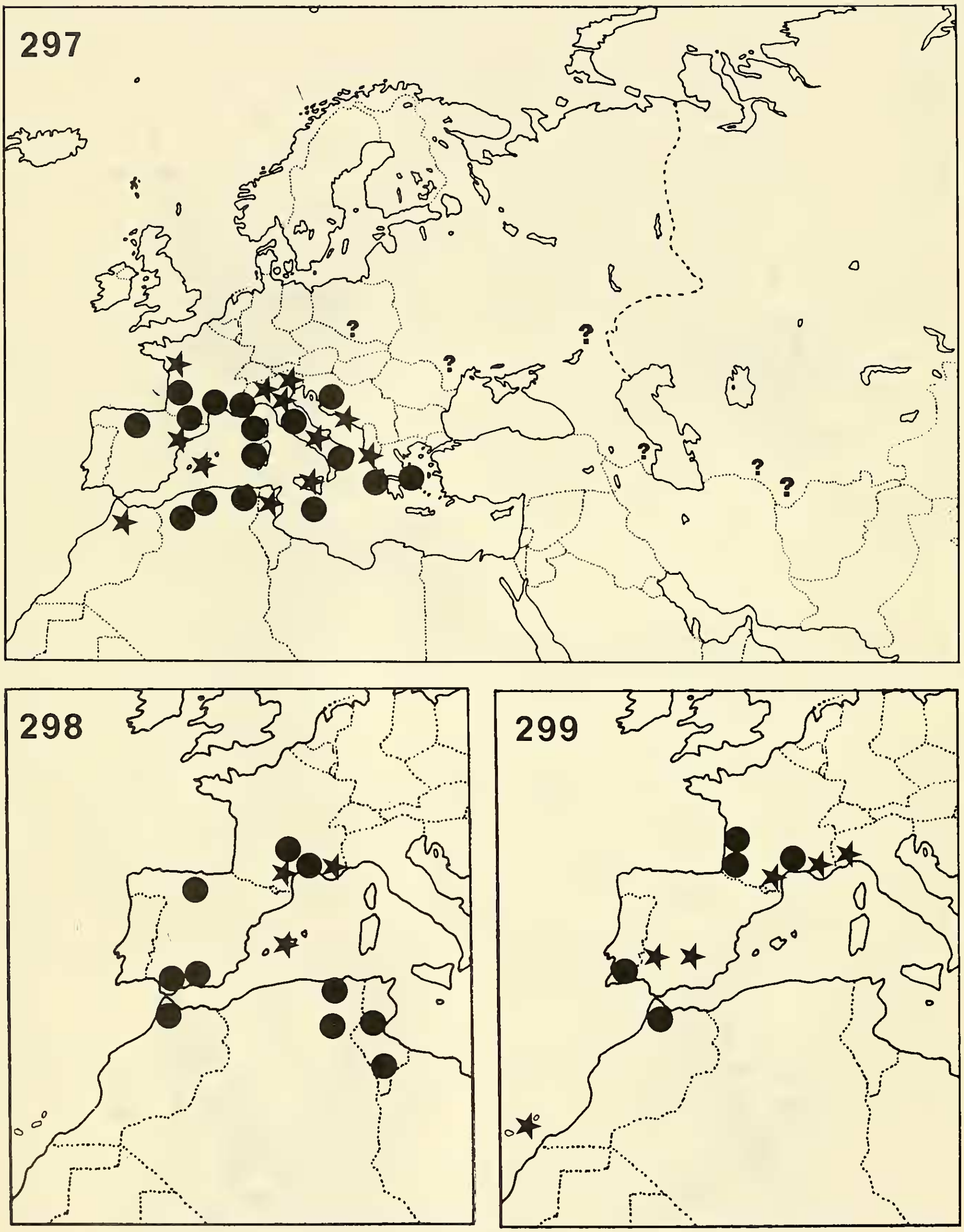


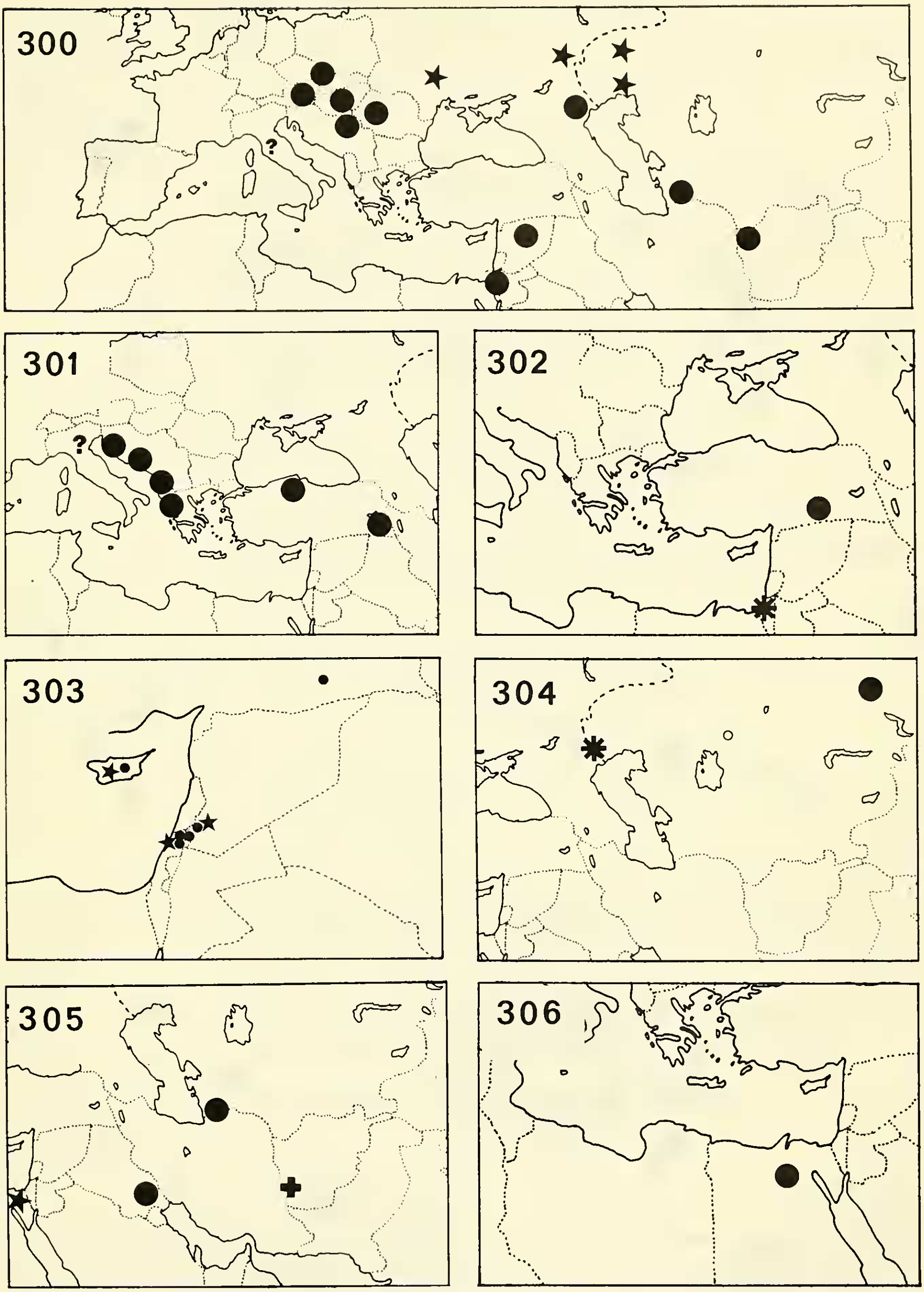
Fig. 292. Distribution of *Haliplus fulvus* (dots: material examined, stars: literature records).



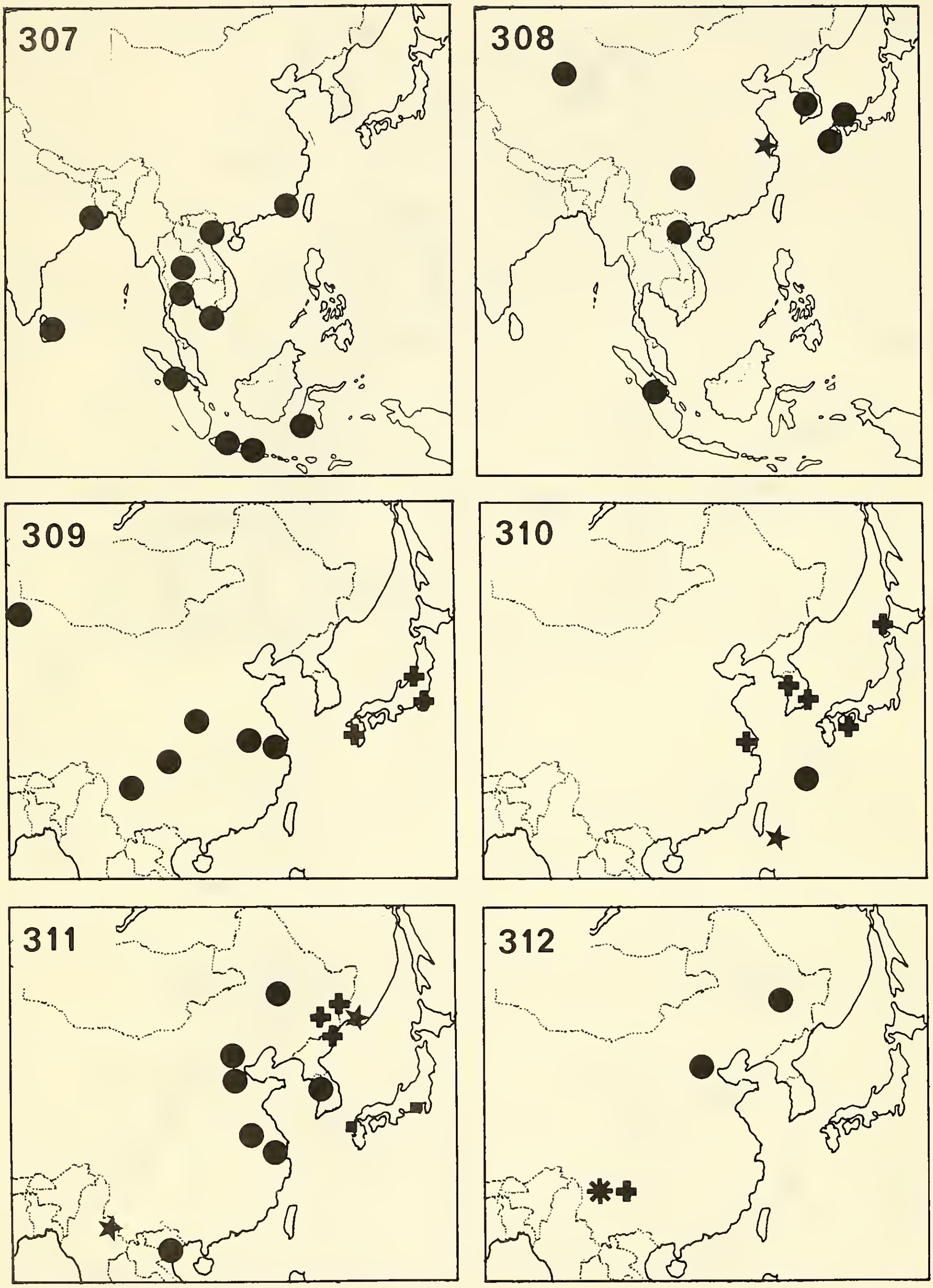
Figs. 293-296. Distribution of *Haliplus* spp. 293, *H. laminatus* (dots: material examined, stars: literature records); 294, *H. mucronatus* (dots: material examined, stars: literature records); 295, *H. flavicollis* (dots: material examined, stars: literature records); 296, *H. variegatus* (dots: material examined, stars: literature records).



Figs. 297-299. Distribution of *Haliplus* spp. 297, *H. guttatus* (dots: material examined, stars: literature records); 298, *H. andalusicus* (dots: material examined, stars: literature records); 299, *H. rubidus* (dots: material examined, stars: literature records).



Figs. 300-306. Distribution of *Haliplus* spp. 300, *H. maculatus* (dots: material examined, stars: literature records); 301, *H. dalmatinus* (dots: material examined); 302, *H. jaechi* (dot) and *H. kulleri* (star: material examined); 303, *H. gafnyi* (stars) and *H. ortali* (dots); 304, *H. angusi* (dot) and *H. astrakanus* (star); 305, *H. abbreviatus* (dots: material examined, stars: literature records) and *H. villiersi* (cross: material examined); 306, *H. maculipennis* (dot: material examined).



Figs. 307-312. Distribution of *Haliplus* spp. 307, *H. pulchellus* (dots: material examined); 308, *H. eximis* (dots: material examined, stars: literature records); 309, *H. chinensis* (dots: material examined) and *H. ovalis* (cross: material examined); 310, *H. kotoshonis* (dot: material examined, star: literature records) and *H. sharpi* (cross: material examined); 311, *H. diruptus* (dots: material examined, stars: literature records) and *H. basinotatus* (cross: material examined, square: literature records); 312, *H. excoffieri* (star), *H. davidi* (dot) and *H. holmeni* (cross).